GLEANINGS IN BEE CULTURE

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EDITORIAL

By E. R. ROOT.

DEATH OF E. L. PRATT.

JUST as our last form was going to press for the last issue we were able to squeeze in a short announcement of the death of E. L. Pratt, generally known as "Swarthmore," which took place on March 11. We have no particulars relative to his death, except that he died of pneumonia, and his illness was very brief. We intended to get a biographical sketch in this issue, and had written for certain facts in his life, but they have so far failed to come in.

Mr. Pratt was a genius at queen-rearing. He devised and improved many a method, both in Europe and America. More anon.

ARTIFICIAL PASTURAGE THAT PAYS; ALSIKE AND BUCKWHEAT.

ELSEWHERE in this issue, pages 198 and 199, we refer to our practice of furnishing alsike-clover seed to the farmers within the vicinity of our bee-yards. Where the seed is to be sown within one-fourth of a mile, say, of a yard, we furnish it free; but for all distances from that to one mile we furnish it at half price. Any thing over a mile we charge full price.

If a farmer proposes to sow a field within one-fourth mile of a bee-yard, and there is a piece of woods intervening, we charge him half price. While the bees will fly over the woods, we estimate that its very presence increases the distance so that the bees will not visit the field in question nearly as much as if the obstruction were not in the way.

We consider this distribution of alsike-clover seed as one of the most important things that a modern apiarist can do to improve his locality for honey. Alsike comes on earlier (and very often lasts longer) than white clover; and even if the field in which the seed is sown is plowed up in two years, the very fact that it is self-sowing makes it more or less perpetual.

Mr. Wm. McEvoy, of Canada, a year or two ago called attention to the importance of furnishing the seed free or at half price, as he found it very materially increased the honey-flow. We are of the opinion that one can increase his surplus possibly 50 per cent in some cases. Suppose one does give away $50.00 worth of seed; 10 lbs. extra of comb honey for 100 colonies will twice cover the cost. By giving away seed in this way for three or four years the farmers will be willing after that to pay full price; and in the mean time the soil will be permeated with alsike that will keep on self-sowing in a way that means a constant dividend for many years to come.

In a like manner one can put out buckwheat providing he has a locality where buckwheat will furnish honey. A field of ten acres near a yard will make a very strong showing. While it will not add much to the surplus it starts brood-rearing afresh and brings on new and younger blood for the winter; and if there be more fields they will materially diminish the necessity of feeding.

We expect this summer to furnish seed for *40 acres* near one of our yards *free*. The farmer will make a good thing; so will we.

THE RELATION OF ETIOLOGY (CAUSE) OF BEE DISEASES TO THE TREATMENT.

ELSEWHERE we refer to a bulletin by Dr. Phillips, from the Bureau of Entomology, giving the general statistics and facts regarding the status of apiculture in the United States. Another bulletin, 75, part 4, has been sent out by the Bureau, entitled "The Relation of Etiology of Bee Diseases to the Treatment," by Dr. G. F. White, Expert in Bacteriology, under Dr. E. F. Phillips. Dr. White for a number of years has been giving his full time to the general subject of bee diseases. His bulletin, so far from being an abstract scientific paper, is written in popular form so that any one can understand it.

He very properly says that, in order to understand the nature of bee diseases, we must study and know the causes—that is, their etiology. After speaking of the predisposing causes such as are induced by age, sex, heredity, race, climate, etc., of diseases in general, he goes on to describe the "exciting causes," such as food and micro-organisms. Under the latter he refers to bacteria. He says "it is unfortunate that it is necessary to use the word bacteria, because too many at once think that they are not able to understand any thing about bacteria. This is a mistaken idea. It is not difficult to understand the facts about them." Quoting him directly he says:

> Bacteria (often called germs, microbes, and parasites) are very small plants—so small, indeed, that 12,000 placed end to end measure but one inch. They increase in number with marvelous rapidity. Under favorable conditions each bacterium in twenty minutes becomes two. At this rate countless millions are formed in twenty-four hours. As the soil becomes exhausted in which they are growing, many species form spores which are in a way comparable to the seeds of higher plants. These spores are very difficult to destroy by heat and other disinfectants. It is well to remember, concerning the distribution of bacteria, that they are found in very large numbers everywhere about us, but that most of them are as harmless as the vegetables we eat. But should there be introduced into an apiary, for example, the species of bacteria which causes American foul brood, then the brood becomes exposed to the disease and will probably contract it. . . . . .
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> Having determined these things about bacteria, we are interested in finding out what they are capable of doing. We learn

that some do good, as, for example, in bringing to decay the remains of dead animals and plants, while other species do harm by their ability to produce disease or death in the animals in which they are able to gain entrance. The disease American foul brood, which causes the greatest loss to the bee-keeping industry, has been demonstrated to be caused by bacteria. Above all, you should understand that the death of the brood is due to one species of bacteria growing in the larvæ.

Under micro-organisms the author mentions protozoa and fungi; but as neither of these has so far been found to be the exciting cause of any bee disease he passes on to the infectious and non-infectious diseases. Under the first mentioned may be included American and European foul brood.

Before a disease can be treated rationally, says Dr. White, diagnosis must be made to determine what disease is prevalent. "Too many believe the treatment of bee diseases consists in the control or eradication of a disease after it has found its way into an apiary. This is only the minor part of treatment. The treatment which is of major importance is a preventive treatment. . . To prevent disease in the apiary is to keep it out. To keep it out is to keep out the exciting cause."

In referring to American foul brood—that is, the old-fashioned foul brood that is most commonly known, the exciting cause of which has been found, he says:

In American foul brood the exciting cause, *Bacillus larvæ*, is found in immense numbers in the bodies of diseased and dead larvæ. These dead larvæ, for the most part, are allowed by the bees to remain in the brood cell as a scale. The honey also has been demonstrated to contain the bacteria which produce this disease. The pollen may be contaminated with the spores of this disease-producing organism. The combs from an apiary affected with American foul brood are a fruitful source of infection. The inside of the hives which have contained colonies suffering with American foul brood may be contaminated with the germs which cause the disease. Honey-extractors, honey-tanks, and wax-extractors which have been used in infected apiaries are also a fruitful source of infection. Therefore if you are to keep the disease-producing bacteria out of your apiary, and thereby keep out disease, you must not feed honey unless you are positive that it did not come from an infected apiary or that it has been thoroughly boiled. Neither must you use old combs unless you are positive that they have not been in an infected apiary. Use no bee-supplies from an infected apiary unless they are thoroughly disinfected.

In separating the disease-producing germs from the colony all the combs are removed. This removes the principal sources from which the brood is infected—foul-brood larvæ and honey. It is always safer to allow the bees to go into a new hive or a hive which has been thoroughly disinfected. The greatest care should be exercised in protecting all infectious material which has been removed, that it may not be robbed by the bees.

In the last paragraph quoted we draw attention to the fact that he says it is always safer to allow the bees to go into a new hive or a hive which has been thoroughly disinfected. Too much emphasis can not be placed on this point. While we know our friend McEvoy, in Canada, claims that the disinfection of a hive is unnecessary, our own experience has demonstrated that foul brood could be (and has been) communicated by the hive alone. We have had reports from Canada, also, as well as elsewhere, showing the reappearance of the disease when the hive itself was not disinfected. While, 99 times out of 100, merely shaking on to foundation is perhaps sufficient, yet if there is one case in a hundred where disease is transmitted through the hive (and we have ample proof that there is), *all* hives should be disinfected. We are glad to note that our government officials stand out square and clear on this proposition. So much for digression.

Referring to *Bacillus larvæ*, the cause of American (or old-fashioned) foul brood, Dr. White says the spores of this bacillus are very resistant of heat and other disinfections. They resist the temperature of boiling water for fifteen minutes; a five-per-cent solution of carbolic acid for two months; the action of mercuric chloride (corrosive sublimate, 1:1000) for the same length of time.

With regard to the use of drugs in general, he says the results do not indicate that they have the value claimed by some of our English writers. That has been our experience, and, in fact, the experience of practically all foul-brood inspectors in this country.

Of the European foul brood (black brood), Cheshire and Cheyne found *Bacillus alvei* to be the exciting cause. Dr. White, in his early investigations, found this species, not in the ordinary foul brood, but in black brood. After years of work, during which he proved his way time and time again, he found the *Bacillus larva* was the exciting cause of foul brood, and *Bacillus alvei* present in black brood. But during the past year he found something else which may possibly be the real exciting cause; but like a true scientist he is looking for more proof. Regarding this disease known as European foul brood (black brood) he says:

A number of organisms have been found in the larvæ dead from this disease, and some of them have been described. One species has been encountered in our investigations of the disease which is of special interest. The individuals of this species are quite small, apparently non-spore-producing, and have so far failed to grow when sown on our artificial media. Until we know more about this species it will be referred to as *Bacillus "Y."* Since the cause is not positively known, the amount of heat and chemical disinfectants to destroy the virus has not been demonstrated. If, later, *Bacillus "Y"* is demonstrated to be the cause, we shall expect very much less heat will be sufficient to kill it than is necessary to kill *Bacillus larvæ*, the cause of American foul brood. Likewise we shall expect that chemical disinfectants will be much more readily effective. Until we know more about the etiology of European foul brood we can do no better than to suggest the application of the same principles which are found advisable in American foul brood.

Some of our European bacteriologists may be inclined to discredit the work of Dr. White; but they should remember that, while they have made investigations covering only short periods of time in reference to bee diseases, *he* has been giving his whole time to such diseases in particular, paying special attention to American and European foul brood. We have every reason to believe that time will vindicate him in the special work he is doing.

Referring to pickled brood and paralysis he says very little is known about either. These will doubtless receive his attention as soon as he can prove his way as to the cause of European foul brood.

Copies of this bulletin can be obtained by sending five cents to the Superintendent of Documents, Government Printing-office, Washington, D. C. Always remember that stamps will not be accepted. Inclose the coin in a small envelope or piece of cardboard.

"THE STATUS OF APICULTURE IN THE UNITED STATES;" AN INTERESTING ARRAY OF FACTS AND FIGURES.

FOR years there has been an urgent call for some book or pamphlet giving the statistics relating to apiculture in the United States; but until recently no complete set of figures has been prepared; but, thanks to the Department of Agriculture, Washington, D. C., we have now Bulletin 75, part 6, by Dr. E. F. Phillips, that con-

tains an interesting array of facts and figures showing not only the magnitude but the importance and possibilities of bee-keeping in this country. A large amount of data has been gathered from the Government reports, and these are all put in convenient form for ready reference. In speaking of the magnitude and importance of the pursuit, Dr. Phillips, in his introductory remarks, says:

> Few persons realize the magnitude, importance, and possibilities of the present bee-keeping industry in the United States. Those who are conversant with the pursuit, and even those who are extensively engaged in it, generally fail to comprehend what an important factor in the agriculture of the country apiculture is as a whole, or how much the honey-bee, by collecting nectar and storing it to produce a commercial product, is instrumental in saving our resources. Although the total value of bee products is small as compared with the value of the products of many other branches of agriculture, it nevertheless has an importance which should not be overlooked. . . . Few rural pursuits have made greater progress during the past half-century than has this one. . . . . .
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> According to the census of 1900 the average number of colonies on farms reporting them was 5.8106, valued at $14.40—a very small investment. In some recent work of this Bureau it has been found that in the State of Massachusetts the average number of colonies reported was 5.5 per bee-keeper. This last figure should not be taken as an index to the condition in the whole country, for as one goes farther west the holdings are found to be larger. In California, for example, while there are some small apiaries, the majority are quite large, and the average is several times that ot Massachusetts. The number taken from the census can scarcely be accepted as correct.
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> The number of men who rely solely on the production of honey and wax for a livelihood is rather small, and most of the extensive producers of the West carry on some other business, at least for the part of the year when the bees are less active. The reason for this is found in the nature of the industry. Any location is limited as to the number of colonies of bees which it will support, and in consequence a bee-keeper must either carry on some other business or establish numerous out-apiaries to enable him to keep bees enough to make it an occupation which will support him. Since the establishment of out-apiaries is attended with certain disadvantages, it usually follows that bee-keeping becomes a minor part of a man's occupation or even a side line.
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> Then, too, bee-keeping is taken up by many as a recreation or a subject of nature study. Such persons do not wish to make it their sole or main occupation. Many farmers also keep a few colonies of bees and add to their income to some extent in that way. It is obvious that bee-keeping must continue to be an avocation in the majority of cases.

THE SCOPE OF THE INDUSTRY.

Dr. Phillips estimates that the annual production of honey in the United States is somewhere about $20,000,000 in value, and wax about $2,000,000. He very properly says that, "since the harvest depends so completely on various high-life conditions, there is an enormous variation in the annual yield." Of the number of bee-keepers in the United States, he places the figures at something like 700,000. In comparing these figures with the United States census report he says, "It is very obvious that the census figures are entirely too small, and are far from doing justice to the industry."

IMPORTS OF HONEY INTO THE UNITED STATES.

A very interesting set of tables is prepared, made up from various custom-house returns, showing the amount of honey annually imported into the United States. This, in round numbers, is something like 2,500,000 lbs. annually. Of this amount, Cuba sends nearly 50 per cent; Mexico, between 20 and 33 per cent; San Domingo from 1 to 10 per cent; Haiti, 1 to 5 per cent; all other countries, 3 to 4 per cent. Of beeswax annually imported into the United States, the amount aggregates something like 700,000 pounds. Of this amount Cuba furnishes the most; next comes Mexico, then San Domingo, the proportions ranging very closely with the percentages of honey from those countries respectively.

Of the imports and exports of honey, it is interesting to note that the *imports* exceed the *exports* many times over; but it is a remarkable fact that, away back from 1855 to 1860, there was twice as much honey imported into the United States as during the period from 1901 to 1908, showing the domestic product has served to keep the foreign article out. From 1878 to 1900 the imports ran from 1,000,000 to 1,900,000 lbs. per annum; but from 1901 to 1908, with 1903, the big year, the importations annually increased these figures by 1,000,000 lbs. This is probably due to the fact that the large baking concerns are substituting foreign honeys for the domestic product.

The imports and exports of beeswax show a rather different ratio. Since 1890 there has been a gradual increase in imports, while the exports from 1851 to 1908 have very markedly fallen off. The exports in 1851 amounted to 415,000 lbs., while in 1907 they show only 117,000. On the other hand, the *imports* for the first three decades since 1850 was practically nothing, while in 1908 they reached nearly 700,000 lbs.

Next Dr. Phillips introduces data showing the value of the bee as a pollinating agent. On this question he winds up by saying, "It is safe to say that the indirect benefit of the bee-keeping industry annually adds to the resources of the country *considerably more than the amount received from the sale of honey and wax.*" Italics ours.

SOURCES OF LOSS TO THE BEE-KEEPER; WHAT BEE DISEASES COST IN THE UNITED STATES ANNUALLY.

In speaking of the sources of loss to the bee-keeper he mentions swarming, winter losses, waste of wax, enemies, and last, but not least, disease. As an example of the annual loss from the last item he introduces some figures from Mr. Chas. H. Stewart, who is foul-brood inspector of a certain number of counties in New York. Previous to 1899 the disease cost the State in these counties over $39,000. This was reduced to $25,000 in 1897; 20,000 in 1900; $10,000 in 1901; $5000 in 1902, until it was less than $2000 in 1905, making a grand total in the counties mentioned of $110,000. Dr. Phillips says if a loss of $25,000 is possible through the ravages of bee diseases in a few counties in one State, and if there are many areas much larger where the disease is equally epidemic, the loss from foul and black brood may well be estimated at *$2,000,000 annually*. These figures are somewhat staggering, but they are probably not far from the truth. Right in this connection it is interesting to note that, through the work of Mr. Stewart, the annual loss from bee diseases was reduced from nearly $40,000 a year to less than $2000. This speaks well of Mr. Stewart.

Eighteen States now have foul-brood laws, and one other State has since been added (since the bulletin was published) making 19 in all.

This bulletin as a whole is very interesting, and should prove to be an important addition to any bee-keeper's library. It can be had by applying to the Superintendent of Documents, Government Printing Office, inclosing 5 cents. Stamps will not be accepted.

STRAY STRAWS

By DR. C. C. MILLER, MARENGO, ILL.

UNCAPPING-MACHINES are in the air. Arthur C. Miller is out anew with a "decapper."

ENOS H. HESS, p. 181, try my kind of upper entrances. Simply slide each story forward or backward enough to make the opening.

R. F. HOLTERMANN, p. 177, thinks plenty of fresh air for bees in winter of more importance than temperature, and ye editor seems to agree with him. Shake.

J. L. BYER, you say, page 164, that your bees roar when it goes above 50, although there is plenty of fresh air. I bet there isn't enough. [We agree with you.—ED.]

REPLYING to Rev. W. W. Howard, in this locality I doubt the advisability of making a start at queen-rearing before clover bloom unless it be in a strong flow of dandelion.

I. W. BECKWITH, I don't believe bees care a whit for the noise of thunder, nor for its jar either, p. 177. It's the clouding up; and the bees will scurry home all the same if there's no thunder at all. [Right you are.—ED.]

J. E. CHAMBERS says, p. 178, "the queen just hatched is no match for the old one." But did you ever know a queen *just hatched* to get into a scrap with an old one? She is just a baby then, and neither queen nor workers pay any attention to her. When she gets older, and puts on airs as a queen, then the trouble begins.

WITH INTEREST I have read Louis Scholl's last item, page 102. But see here, Louis, you make changes, and then say that the shaking which the bees get in the making of those changes puts the energy into them. Are you sure it's not the changes rather than the shaking? Shake one colony—*hard*—without any changes; then make the changes in another with the least shaking possible; then see which gets the energy.

E. D. TOWNSEND says, page 112, that a high-board fence "protects the hives only enough to entice the bees out of doors when it is too cold for them to fly, so that they are caught in the cold wind and lost." Some will take it from that that Mr. Townsend thinks such a fence worse than useless. I doubt if he holds that view. While the fence may do more harm than good on a day warm enough to entice the bees out to be chilled in the colder air above, for every such day there will be 20 when it will be too cold for the bees to think of coming out at all, and then the fence will do a lot of good by keeping the hives warmer.

THAT SCRAP with Coggshall, p. 174. Aren't you two talking about two different things, Mr. Editor? You're talking about sealed covers *with packing* over them. I'm not certain that he is; at least, he *says* nothing about packing over the sealed cover. Makes all the difference in the world. [No; as we take it, Mr. Coggshall and ourselves were talking about the same thing. Some time ago, after seeing our editorial, favoring sealed covers with packing material on top, he wrote us that he differed with us on the proposition, and would shortly send in a communication defining more explicitly his views. They are given on page 174. While perhaps he did not specifically mention that the sealed covers under discussion did have packing material on top, that is implied. It not, he will kindly correct us.—ED.]

WHEN BEES "begin to 'roar,' we would not keep them in the cellar one day longer," p. 152. Some beginner will take that literally, and take his bees out when they can't fly, and lose a lot more than if he had left them in the cellar. Open up the cellar nights, and keep dark daytimes, and wait for a day when they can fly, even if it's a month. [Referring to page 152, we do not see how the beginner can misunderstand if he reads the rest of the sentence from which you quote. For, observe that we added "although we would try to hold off until there is a possibility for the bees to fly." This is quite in line with your advice, except there is an intimation that, under some conditions, the beginner might better take the bees out any way, but we did not so mean it.—ED.]

R. B. ROSS, JR., has my thanks for suggesting that reference to GLEANINGS, 1896, p. 112, would settle a muddle between you and me, Mr. Editor. On page 65, 5 cents was deducted for commission, etc., on honey sold at 15. I said, p. 74, I thought that that 5 cents should be cut in two. You replied that I helped make that figure at a Chicago convention. So I did; but please remember those were the figures of the convention, not mine, and I wouldn't endorse them. Here are the figures, GLEANINGS, 1906, p. 112:

Selling price of honey per lb		.140
Freight	.004	
Commission at 10 per cent	.014	
Cartage	.002	
Loss in leakage	.007	
Shipping-cases	.010	
Total expense		.037
Net cash to the purchaser		.103

That was for 14-cent honey. The greater commission on 15-cent honey would make total expense .038—nearly 4 cents, but not 5. But there are two items there that I don't think belong there—loss in leakage, and shipping-cases. I've shipped a good bit of honey, one time and another, and I don't remember ever to have had any "loss in leakage," much less an average loss of 15 cents on each 24-section case. Possibly you may say that, if I didn't endorse the figures, at least I didn't object to them. Please remember that, as presiding officer, I merely put down on the board the figures given me.

Deducting that .017 from the .037 leaves just 2 cents as total expense on 14-cent honey, and 2.1 cents on 15-cent honey. I was wrong, p. 98, in thinking that 2 cents was talked of at the convention. I was mixed up with the fact that for years 2 cents has been my own view. [So you acknowledge, after all, that you had something to do with making the figures. While it is true you did not make them, if we mistake not you accepted them at the time as being approximately right; but, allee samee, we can not help feeling that 4 cents is rather large; and we rather agree with you that it ought not to cost more than 2½ cents to sell a fourteen or fifteen cent honey.—ED.]

BEE-KEEPING AMONG THE ROCKIES.

By Wesley Foster, Boulder, Col.

PUSHING HONEY.

An effective way to increase the sales of honey is to get the grocer interested. If he likes the honey he will push it. One of my customers instructed his clerks to show a jar of honey to every person coming into the store, with the result that several dozen jars were cleaned out in one day—all the stock he had on hand.

WINTER LOSSES.

A report comes from Fort Collins, Colo., of a forty-per-cent loss in bees. This is due to the large amount of honey-dew gathered there last season. Smelter smoke has practically destroyed several yards near Denver.

The loss of bees in Boulder Co. will not be as high as at Fort Collins, but a ten-per-cent loss is a low estimate, I think.

BEE-KEEPING WITH OTHER LINES OF BUSINESS.

A man broadens his view and gets more out of living by not confining all his energies to one business. There may be some lines of work that require all one's thought; but bee-keeping, I think, goes well with other things. The best bee-keepers in the West are farmers, fruit-growers, business men, etc. They have other interests, especially land investments. The man is a dead one who is not taking advantage of the rise in land values which he himself helps to create.

Personally I like to keep bees, sell honey, write for Gleanings, and make my savings earn something through investment in land or bees.

UNPROFITABLE METHODS.

An illustration appeared on p. 1437, last year, of several display-cases for comb honey. These cases were gotten up very neatly, but held only three sections each. I do not think such methods are much credit to the industry. It looks too small. If a grocer can not handle a 24-lb. case of comb he would better not handle any, and let the man handle it who can give it a creditable showing. I refuse to sell less than 12 sections to any grocer; and if the matter is presented to them right they will see it as we do or as we should. This smallness in our business methods eliminated, there will be less questioning, "Does bee-keeping pay?"

Another thing that looks bad, and prevents us from going on to more important work, is taking back from the consumer or retailer honey-glasses, jars, cases, etc. I have even had people bring the sections back to me. These methods are out of date, and a man who wastes his time in such ways will not make a very good living at bees.

[What our correspondent says is true, but Mr. Waggoner, the originator of the case mentioned, advised the use of the small size more especially as a sample case for exhibition purposes, his idea being that the stock could then be kept in regular shipping-cases, behind or under the counter. —Ed.]

SHIPPING-CASES, AGAIN.

I gather from Mr. Crane's remarks on p. 100, Feb. 15, that he assumes it an impossibility to ship comb honey without breakage—at least, much of it is broken before it reaches the retailer. From this he reasons that because honey will be broken it is likely to be a cleaner mess in a single-tier than a double tier case. I do not agree with this; for with the use of a paper tray between tiers the leakage is kept off the lower sections. Further, it is the rule for honey to reach the retailer in good shape in double-tier cases—more so than with single-tier. Perhaps Mr. Crane is of the opinion that all western honey is put up in double-tier cases. This is not the case. Much of it is put in single-tier, and we have a chance to size up the merits from experience.

Thank you, Dr. Miller, for saying the catalogs should answer my objections or change their advice. They will eventually change their advice, for now we have the corrugated paper which is going to be used in cases this year—two pieces for the double-tier case. The drip paper has been used between tiers right along.

What I meant in No. 1 objection, page 1312, Nov. 1, was that the hand-hole in a single-tier case is further from the body of the person carrying it than that of a double-tier case, and so the single case is more difficult to carry. This will not be noticed unless a good many are handled.

My second and third objections are practically admitted by Mr. Root when he says that a cubical box is stronger than a flat one, weight being the same. The cubical double-tier shipping-case will not twist, and it will stand much more stepping on. No! folks should not step on nor sit on comb-honey cases; but we do not have control of all the people who handle our honey, and the strongest box for the same money is the one to have.

My fourth objection to the single-tier case I consider one of the strongest, for it is the little points upon which a sale hinges. A grocer will take the double-tier glass-front case every time—the big showing of honey looks good to him.

Speaking of the weight of a case on a glass show-case, I do see a good deal of this in stores. I have seen cash-registers on top of glass show-cases. The grocer is careless who allows any thing of this kind, however. Editor Root says that, as the case approaches more nearly the shape of a cube, careless freight-handlers have a tendency to lay it on its back or face. This does happen, but seldom, with the single-tier, though it is so easy to wedge into narrow places on edge, and it is done very frequently—more often, I should say, than a double-tier case is laid on its back or face. In the main, I consider Bro. Root's remarks on this serious question in my favor. We are to have the corrugated paper this year for both tiers of sections, and this makes it the ideal case.

The box is more rigid. It is easier to carry. It shows off more honey, and to better advantage. Takes less space on the counter. Protects from dust one-half of the case while the top half is being sold. Will stand stepping on without danger of breakage. [The introduction of corrugated paper has modified this whole proposition. We are frank to admit the double-tier case has much in its favor.—Ed.]

NOTES FROM CANADA

By R. F. Holtermann.

After reading all the valuable articles written by Canadian bee-keepers in the March 1st number of Gleanings I do not know in which to feel the greater pride—the Canadian bee-keepers or Gleanings I believe W. A. Chrysler's article on honey-knives is valuable. S. T. Pettit's honey-strainer also seems much ahead of ordinary methods.

SECOND-HAND CANS.

R. A. Burnett's article, page 29, I can fully indorse. Second-hand cans rarely pay for the extra work. I sometimes use them for dark grades of honey, but nothing could induce me to bring cans, first used by some one else, to my apiary. I am too desperately afraid of foul brood to run any such risk.

FOUL BROOD ILLUSTRATED.

At the Norfolk meeting it was also decided to ask the Ontario Bee-keepers' Association to secure copies of a very fine lithograph plate, which illustrates in natural colors a brood comb with the cells affected with foul brood. This lithograph has been distributed in Germany, and would have great educational advantages. The government might supply them to the inspectors of apiaries, and any other interested parties applying for them. It has been decided that the Department of Agriculture will next season increase the number of foul-brood inspectors from seven to fourteen.

ADULTERATED HONEY.

In the last annual report of the Department of Inland Revenue, which has just been issued, honey offered for sale in Canada, imported or otherwise, makes a very poor showing. Out of 253 samples collected by the Department, 116 were found to be adulterated. At the last meeting of the Norfolk Bee-keepers' Association, Morley Pettit brought in a resolution which was passed, requesting that the Ontario Bee-keepers' Association appoint a committee which shall see that parties which have made themselves liable are prosecuted Something along this line is needed to punish those who adulterate honey and other goods.

STAND BY DR. WILEY.

Referring to your editorial, stating that "the big corporate interests are still after Dr. Wiley's scalp," let me say that the bee-keepers—yes, and the consumers of foods, the producers and exporters of pure food—should actively stand by Dr. Wiley. He has done more than any other man I know of to give pure food to the people of the United States, and he has also given confidence in foreign countries to the consumers of United States foods—a confidence which was beginning to be much needed. The man who is an active agent in securing needed reforms is bound to make a target of himself, especially if he commits the crime of succeeding in what he undertakes. If what has been advocated is of public interest, and if he is not actively supported and sustained when persecuted by the enemy it is but small encouragement to others to sacrifice themselves for the public interest. By all honorable means strengthen Dr. Wiley's hands *now*.

GOOD STORES.

The following letter will be instructive and of interest. It comes from J. L. Byer, Mt. Joy, Ont., dated March 8.

The March 1st number of Gleanings has just arrived, and what you say as to our bees not having had a flight up to Jan. 24 prompts me to tell you that they have not had a flight *yet*—March 8. One day a few of the colonies had a partial flight, but only a comparatively few bees of any one colony have been out. On Jan. 24 every thing was foggy here, and, as you say, 100 miles often makes a great difference. This year 20 miles made all the difference, as all bees west of Toronto had a flight, I believe. You will remember my claims to the idea that, if the bees have really good stores in abundance, and are properly protected, they do not need a flight for four months or even longer, and I really believe that they are better off without *too many* flights, and especially so under certain conditions which I have not time to enumerate. Well, although our bees have not had a flight since Nov. 25, yet they are in excellent condition. I have just returned from the Altona yard, where I found all colonies clustered quietly. The day was quite warm; and as I gently lifted the corners of the packing for a look in many colonies, the bees were observed to be *all over* the hives, and as quiet as though it were in November. Although the sun was shining brightly, and no boards were up in front of the hives, yet hardly a bee was flying, showing plainly that they were in no distress; for if such was the case, as warm as it was to-day thousands of bees would have been out.

Mr. F. J. Miller, last year president of the Ontario Bee-keepers' Association, has kindly sent to the writer, for use in Gleanings, the following method for quickly finding queens. He also writes in a separate letter, "I ask that you send it forward without *carving*, as a slight change in detail will surely affect results." By quoting Mr. Miller, the reader can be warned against changing in any way the method recommended, as a "slight change in detail will surely affect results."

MY QUICK AND SURE METHOD OF FINDING QUEENS FOR CLIPPING IN ALL STRONG COLONIES WHILE UNPACKING.

Smoke the bees as little as possible while removing from the cases. As soon as a group of four is unpacked, smoke one of the strongest colonies well, and wait about one minute, or possibly one and a half when using a frame as deep as the Langstroth. Now again smoke gently; and, *immediately* following the second smoking, listen attentively to the roar of the bees, and fix in the mind the key in which it is being sounded. In a few moments this will change with a sudden drop to a lower note. By again carefully fixing the sound, a second decided drop will be noticed (the time lapsing between the changes in sound being greater with an old queen). Now lift the cover as quickly and quietly as possible, and on the under side will be found the queen. In case of a queenless colony there is no decided drop in the sound, but a prolonged roar with a gradual dying-away.

London, Canada. F. J. Miller.

[There is a bee-space on the under side of Mr. Miller's covers.—R. F. H.]

CLOVER KILLED BY DROUTH; WILD-MUSTARD HONEY DOES NOT GRANULATE.

In regard to white clover for 1909, it looks to me like a poor prospect. A very little green white clover is to be seen now. The blue grass has grown up green since the drouth of last summer.

We have a new plant about three feet high, called wild mustard, with yellow bloom. It produces a fine-flavored honey, amber in color, and very thick. It does not granulate.

Boonville, Ind., Jan. 25. L. Eckstein.

GLEANINGS FROM OUR EXCHANGES.

By W. K. Morrison, Medina, O.

In connection with the international exposition for the east of France, which will be held at Nancy, from May to October, there will be an apicultural congress from August 21 to 24.

The reason why Mr. Scholl's honey did not keep is simple. It was kept in too cold a place. The fact that the levulose separated from the dextrose shows it. A temperature of 90° is none too high for honey.

At the census of 1873, Alsace and Lorraine had 80,694 hives, of which 17,165 were modern movable-frame devices. By the census of 1907 the number was 86,579, of which 60,000 were supplied with movable-comb frames. The bee-keepers' association has a membership of 6000.

Mr. Alin Caillas, author of a memoir on the adulteration of honey and wax, has been "decorated" or "crowned" by the Agricultural Society of France as a recognition of the work he has done for bee-keepers. He recently discovered that honey shows radio-activity, at least some kinds of it.

PLURAL QUEENS IN EUROPE.

A writer in *Praktischer Wegweiser*, who hails from Brunswick, says that in the winter of 1903 he successfully wintered three queens in one colony. In 1904 he tried six, and one of these died early in 1905. In the winter of 1905 he again tried six in one colony, but this time three died; but the three left were all right. This present winter he has five queens in an extra-strong colony.

A FRENCH HONEY-PRODUCERS' LEAGUE.

Some ten years ago an effort was made to found a honey-producers' league by certain bee-keepers in France, but without much success. They now propose to organize themselves thoroughly, and for this purpose they publish in the February number of *L'Apiculteur* the proposed constitution and by-laws Mr. H. Josepff is the provisional secretary and manager. Their headquarters are the rooms of the Central Society of Apiculture, 28 rue Serpente, Paris.

There is a story going the rounds of the newspaper press regarding the number of bees in Europe. It is misleading, though taken from a German trade paper, *Handels Museum*. For instance, it credits "brave little Holland" with 240,000, and Russia the same. I suspect that one single Russian province contains that many, for Russia is a great honey-producing country, and always was. It has six or seven good bee-journals, and is forging ahead fast. Russian Poland is a great bee country, and has been for many yea s.

As to irrigation projects engineered by Uncle Sam, it should be clearly understood that on nearly all of them alfalfa will be king for some years to come. Of course, there are exceptions, but very few. They are mentioned in GLEANINGS because the homesteads on them are given away *gratis*. On a number of them there is still room for more settlers. Even on new private projects near Denver, alfalfa will be king, and I know of land not twenty miles from Denver which gave good crops of honey 25 years ago, and it is still productive.

Referring to Mr. J. A. Green's observations on beet sugar, I quite agree with what he says except as regards the distance beet sugar is sent. A year ago the *Gem State Rural*, of Idaho, in speaking of the same subject, said that the house-keepers in that State preferred cane sugar, and actually paid 25 cts. per 100 lbs. more for it, though the beet sugar was produced right at home, and the cane came from the Atlantic or Pacific seaboard. The beet-sugar men were evidently incensed at this. As to the bluing in beet sugar, it is claimed that the sugar-men maintain an expensive lobby at Washington to fight Dr. Wiley. The latter wants to suppress bluing in beet sugar and sulphur in cane. He will ultimately succeed.

If you wish to plant a climber that is particularly grateful to bees, try *Antignon leptopus*, sometimes spoken of as *Coralita*. It covers a veranda or porch with great rapidity, and its rose-pink blossoms are beautiful. The bees work on these unceasingly. As it is a native of Mexico, it can not stand a freeze; but if carefully treated it will spring from the root the following spring. Various seedsmen supply the seed.

Among bulbs nothing will surpass the Bermuda buttercup oxalis for bees. It bears a profusion of yellow blossoms which remain for quite awhile. The bulbs are cheap, and easily procured. It is a fine pot-plant. It might be naturalized in California with good results.

Even so conservative a paper as the *Pacific Rural Press* is throwing mud on Dr. Wiley from all directions. This is because he takes the ground that sulphuring dried fruits is contrary to the provisions of the national pure-food law. The Californians interested have raised funds to "protect" their "interests," but the consumers in the effete East do nothing. It was always thus.

If these "interests" would do as bee-keepers are doing, turn out a faultless product, they would not do this. Formerly it was thought sulphur was excellent for the human constitution; but medical men now think differently. Even salt is not recommended except in very limited quantities. Not long ago it was considered a promoter of long life and happiness.

Honey-men should make a long handle of the fact that their precious sweet does not require salt, sulphur, benzoate of soda, nor any other *mineral* preservative. The whole thing is digestible, even by a baby, and it is *all* digested—no waste. The American consumer is being rapidly educated on the subject of the healthfulness of certain foods which were formerly considered excellent for human consumption.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

OVERSTOCKING; HOW FAR DO BEES FLY?

"Mr. Doolittle, I have not forgotten what we were talking about last month, and I have been inquiring of every man whom I thought would know any thing about the matter for a location for bees similar to the one you described."

"Well, what have you found, Mr. Smith?"

"Very nearly what you hinted at in the last thing you told me before I left—that it would be impossible to find all the necessary plants and trees in any one locality to give me the very best location. But I did hear of one place nicely sheltered by a piece of woodland, where there are willows in plenty, hard maple and fruit bloom to a fairly good extent, white and alsike clover by the hundreds of acres, and a few basswood-trees in some gullies, and scattered up a hillside two miles away. The farmers make quite a business of raising buckwheat, many of them sowing from ten to twenty-five acres; but there are no fall flowers save a little goldenrod about the roadside, fence-corners, and other rough places. Do you think I can do better than this?"

"It is very doubtful; and I should be inclined to think that you might find a good basswood yield, for the majority of people do not think that the trees in gullies and out in the open are of any consequence, because they are of little value for lumber; but as a rule such trees give very much more nectar than the straight tall ones which grow in a thick forest. Rough crooked trees not only have twice the twigs and branches, but they seem to give more nectar to each flowret than do those growing in the sheltered woodland."

"That is encouraging, and I think that is the place I shall settle upon. Then this is the only place I have heard of where there are no bees kept within three miles. At other places which seemed equally good there were from one to three apiaries with from twenty to one hundred colonies. You would not think it advisable to go where there were apiaries already established, would you?"

"No; and I am glad to know that you are so conscientious that you would not think of locating in territory already occupied by some one else. To do this would not only be an injury to the one already keeping bees in such a locality, but it would lessen your chances of success as well."

"From what I have told you of this place, how many colonies do you think I can eventually keep with the best results?"

"My views on overstocking may not be considered quite orthodox by all; yet I think I can give facts to prove my position. If I had a location such as you describe I should not fear overstocking it if I had three or even five hundred colonies. When we consider that bees fly, from choice, from two to four miles from home, and are led on by receding bloom to five, six, and seven miles, as up a hill or mountain side, this matter of overstocking is not so much to be feared as many suppose."

"But I have been told by several that bees do not go more than one and a half miles from home."

"I have been told the same; but from much experience during the past I am sure that such statements are fallacious."

"What has been your experience, or what proof can you bring to prove your seven-mile theory?"

"In my early years of bee-keeping we had nothing but the common or black bees in this part of the world. After a while a bee-keeper living three miles distant procured the Italians, increasing them to about twenty colonies the first year by artificial means, so that no swarms ran away. The next spring, before I had any Italians, I was watching the bees at work on apple-blossoms, and presently I saw an Italian bee collecting honey or nectar. This led to a careful examination by way of a count which showed that an average of one bee in five was an Italian, and this with apple-blossoms in profusion everywhere. That same season, when cutting a field of red clover one mile further off from these Italian bees, or four miles in a straight line, I was attracted to bees at work on the clover bloom. Having read how the Italians worked on the red clover while the common bees did not, I jumped off the mowing-machine, and, to my surprise, counted five Italians to two blacks, as the average of several countings, with fields red with clover everywhere."

"But you do not claim that bees can work profitably thus far from home, do you?"

"This question shows me that you are acquainted with the objections of the past—that it is not profitable for bees to fly so far. Let me tell you of some of the things I know in this matter. To the southeast of where we are now talking the land rises more or less gradually for six miles, or to the highest point in this county, where it is from 850 to 900 feet higher than where we are sitting. Unless interrupted by a long rain the bees follow the receding basswood bloom till the top is reached, and I can see no slacking of work in the sections as long as the bloom is plentiful on the hilltop. The bees, also, nearly all work in that direction."

"What has the rain to do with the matter?"

"Just this: If it rains so long that a strip of bloom, say half a mile wide, has gone during this rain, the bees, when the weather is clear again, go where they last found nectar, and, not finding any, they seem to think that the bloom must all be gone, so return without looking further, and thus the mile or more of bloom beyond is of no use to me."

"Well, I hope you are right; but I had the one and a half miles so thoroughly fixed in my mind that it is hard to get away from it."

"If proof could be given that this short distance was really the range of flight of the bee, then I should say that your proposed locality might be overstocked with from 150 to 200 colonies But Mr. Alexander's 700 colonies, profitably kept in one place, should convince any one of the fallacy of the one-and-one-half-mile-flight theory. Keep your colonies strong, and especially so when your clover, basswood, and buckwheat bloom is at its height, and you will have no cause to complain, I am sure."

GENERAL CORRESPONDENCE

THE WILLIAMS SYSTEM OF MANAGEMENT.

More Concerning the Plan of Shaking Bees at Various Times to Give them the Energy of a Newly Hived Swarm.

BY GEO. W. WILLIAMS.

[On page 48, Jan. 15, we commented on the article by Mr. Williams in the December issue of *The Bee-keepers' Review*. In the following article the same writer gives some additional points on this very interesting subject of shaking energy into bees.—ED.]

I have been experimenting for years, looking forward to perfecting a system adapted to the management of a series of outyards for comb honey, so that I could keep enough colonies to make a specialty of the business, and to allow me to use ordinary unskilled help.

We meet, in practice, some moods and contrary notions in the bees that must be overcome before we can obtain a good crop of honey; but we sometimes find, on the other hand, a mental condition that overcomes all these, and would insure a full crop if we could continue it throughout the season. I have reference to the condition of intense and energetic activity shown by normal colonies at the sudden opening of a heavy flow, and also shown by a newly hived natural swarm.

Immediately after a natural swarm enters the hive, work begins in all departments with great vigor. Combs are built, eggs deposited, and honey gathered as if life depended on the issue. This mad scramble to "do things" lasts quite a while, usually, but abates with the progress of the work accomplished. If this desirable mental condition which induces this strenuous work were permanent, bee-keeping would be a sinecure; but we know it does not; and in the degree that it fails, in that degree do we miss the possible profits.

Now, the question naturally arises,

WHY DO BEES WORK SO DILIGENTLY AFTER THE ACT OF SWARMING?

Is it a psychological condition that is caused by the desire for natural increase, or is it a purely physical condition capable of being reproduced by mechanical means? Most if not all writers I have followed attribute the intense activity of this period to the maternal instinct; but I have believed for years that, while the act of swarming itself is, of course, due to the desire for the perpetuation of the species, the resulting activity is the result of the physical conditions attendent on the act, and I have found that these desirable conditions may be reproduced at the will of the operator, and last summer's work has shown to me the pecuniary possibilities of the idea.

The one factor upon which the effectiveness of a system built around the idea of "shaking" depends is the nearness which a "shook" swarm comes to resembling a natural one in the intense activity and other desirable qualities. That they are practically identical is, I believe, accepted by most of our observers, and I have demonstrated it to my own satisfaction by hiving natural and "shook" swarms alternately and noting results. I find in my experiments that the psychological results are nearly alike in each, and vary in degree only as the shaking is more or less thorough. And the principal value of this idea lies in the fact that this "shook" condition can be so easily and quickly produced by skilled or unskilled labor.

SHAKING FOR STIMULATIVE PURPOSES.

It was while experimenting with "shook" swarming, and noting the resulting conditions, that this idea suggested itself to me. Why not apply this simple process to induce the bees to go to work in the sections—accept a new queen—stimulate brood-rearing, quit loafing, or, in short, induce them to do any of the many things that a newly hived swarm will do as a matter of course. The idea was so simple and obvious that I supposed surely some one had advanced it before; but I have never found where it has been advocated.

Then I went to work and built up a system around this idea, and tested it last season, in a small way to be sure, but thoroughly and practically. I find that I can care for more bees with less help with this system than with any other. It seems to be adapted to long-range work, and especially to outyards. The weak point so far observable is that it stimulates brood-raising, and promotes swarming to some extent.

Take, for instance, stimulative feeding. We have had many different plans offered; viz., outdoor feeding, in-the-hive feeding, uncapping the honey, and others, all requiring time and utensils, and endangering robbing. Now, by my system, at the proper date, I "dump" the bees in the proper manner, and the thing is done. Five minutes finishes the job, or less if I am in a hurry. It is not necessary for me to explain the philosophy of the proceedings. The bees are put in the condition of a swarm, and therefore "stimulated" in the best possible manner. Of course, this contemplates a sufficient store of honey for their use, otherwise the feeding required is not "stimulative" but "life-preserving." A proper "stimulating" means, in a good season, a bumper crop, and in any season an increase.

I am aware that bee-keepers usually "go through" their hives about this time, and thereby stir up the bees more or less thoroughly, and usually "spread the brood" or something else equally silly, and attribute the results to the wrong cause. I have found by actual experience that the colony that is simply stirred up really does better than the one that has the brood spread and fully as much as the one that is fed to stimulate it.

This season I worked six colonies on this plan, and I found it increased their efficiency about 38 per cent over colonies worked differently.

I wished to increase this yard as much as possible, and worked to that end and made honey a side issue, although I secured a good crop. I did not feed any, and the results are entirely the results of their own efforts. In summing up this fall, I put 21 fine colonies into winter quarters, each with 30 or more pounds of winter stores, and secured 1368 sections of honey, besides about 80 extra combs and 100 lbs. of chunk honey. I

used only inch starters in the brood-frames, and the average amount of honey was (estimated) 220 lbs. of surplus per colony. The best I could do with my other bees handled differently, but with the same chance, was 125 lbs. of surplus per colony, spring count, and doubled my increase.

I feel assured that there is a future for a system built around this idea, especially for comb-honey production in out-apiaries. I see so much promise in it that I expect to establish soon a system of out-apiaries a mile or so apart, none of them very large, and make this idea the dominant one in my system of management.

Redkey, Ind.

[We have already given our testimony to the effect that we believed, from numerous experiments of our own, that there was something in this scheme of shaking bees. How far it may prove successful in increasing the amount of honey we can not say.

We should like to know particularly whether a "shook" swarm is to all intents and purposes the same as a natural swarm. Many have practiced "shook" swarming, and, as a matter of course, there ought to be quite a number who could give testimony on this point.

In the mean time it is interesting to note that the late E. W. Alexander practiced shaking to induce new energy in a lazy colony. The following, from Mr. Cox, will be read with interest at this time.—ED.]

SHAKING ENERGY INTO BEES AS PRACTICED AT THE ALEXANDER YARD.

I see in GLEANINGS, page 48, Jan. 15, an inquiry about shaking energy into bees. As Mr. E. W. Alexander is dead, and his writing for ever done, I may be allowed to say that shaking was practiced on the lazy colonies in his big yard at Delanson.

The first time I saw it tried was during the buckwheat-honey flow of 1906. There was one very strong colony that would not work. They were so strong that the hive looked black on warm evenings, and there would often be several quarts of bees in the grass around it; yet it gave no honey when we came to extract.

Just after the second trip over the yard, when there was still no honey from that hive, Mr. Alexander called me to help him, and we took every comb and frame of brood away and shook them and gave in their place frames of foundation above and below. I remember Mr. Alexander's remarking, "That is the way to fix colonies that will not work;" and as I let the queen run into the entrance he added, "It would not have been a very bad accident if we had dropped that queen and stepped on her."

One very hot Sunday afternoon, some ten days later, I saw honey running out at the entrance of that hive. Investigation showed the worst case of broken-down combs I ever saw. That colony had gone to work; in fact, with the help of the hot day they had overdone the matter.

Sloansville, N. Y., Feb. 1. R. V. Cox.

[It is remarkable how many tricks of the trade Mr. Alexander knew and practiced.—ED.]

PROSPECTS FOR THE WHITE-CLOVER HONEY CROP.

A Drouth in May and June Hurts Clover More than Any Amount of Dry Weather in the Fall.

BY OREL L. HERSHISER.

There may be isolated localities east of the Mississippi River where 90 per cent of the clover that would have produced honey is dead, and the failure of the crop is an admitted fact; but I believe there are vast areas in that same drouth-stricken region where the clover, down to the present time, is practically unharmed. I believe we shall have a white-clover honey crop if the weather conditions in April, May, and June are propitious.

The normal amount of rainfall and generous growth of clover does not necessarily insure a good honey crop. It may be too cold, or the winds may be so drying as to counteract what would otherwise be an abundance of precipitation; and these or other causes militate against the secretion of nectar. On the other hand, much less than the normal precipitation does not necessarily mean the destruction of the clover or the drying-up of nectar secretion. Sometimes the air is humid when there is little actual precipitation, and the ground is said to dry slowly. It is the hot, humid, sunshiny days that promote the abundant secretion of nectar.

The summer and fall may be very dry without killing the clover. In this immediate locality the weather was very dry from August 18 to Oct. 31, a period of 74 days, during which time the precipitation amounted to but 2.04 inches, whereas the mean precipitation for that period is about 8 inches. Although the drouth was severe in some respects, drying up wells and creeks, and causing numerous forest fires, the clover and grass at all times looked green and vigorous, although not rank, and did not appear to suffer. The soil contained enough moisture to promote a slow and steady growth; and my impression is that there was more than ordinary root development. There was little or no destruction of the plants that will, under favorable conditions, bloom next season. Right here let me mention that it is my experience that seedlings of last season are the plants that will attain to greatest vigor and bloom with the greater luxuriance next season, after which, if they do not die the following fall, will be so far exhausted as to be feeble bloomers the third year; and especially is this true of alsike clover. If alsike clover is cut for seed when dead ripe during a continuous dry spell the plants will surely die. This fact is familiar to the alsike-seed growers. But, to return to the weather conditions of last fall, there were but few windy days during the dry period; and when the forest fires were raging there was so much smoke as at times to obscure the sun before 8 A.M. and after 5 P.M.; and he was much bedimmed during midday. Thus did the smoke screen the sun's rays, shorten the period of daily sunshine, retard evaporation from the soil, lessen the burning effect, and surround the clover with the best conditions to withstand the drouth. The burning of Minnesota, Wisconsin, Michigan, and Canadian for-

ests, and the destruction of countless acres of honey-yielding raspberry-ranges may not be an unmitigated loss. The pall of smoke has undoubtedly saved to the husbandman, over a vast area to the east and south of the fires, his hay and pasture ranges for the forthcoming season that else might have been destroyed. There has thus been abundant and far-reaching compensation.

The conditions that not only carried the clover safely through the drouth, but, in addition, promoted its growth, also gave it greater powers of resistance against adverse winter conditions. The long warm fall and dry earth was favorable for deep rooting, it being necessary for the vigorous plants to strike deeper than usual into the earth to obtain the needed moisture; and the soil, not being saturated when winter set in, heaving will be reduced to a minimum.

We have had an open winter down to the present time, and the ground has frozen and thawed, and snows have come and gone repeatedly, and yet there has been practically no heaving.

It is certainly satisfying to feel that we have all the clover and the conditions for good wintering that are necessary for a good white-clover honey crop; but the weather conditions for April, May, and June are yet to be reckoned with; and these have more to do with the crop than all other conditions of the year.

MONTHLY AND ANNUAL PRECIPITATION.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Ann'l
1897	3.60	3.13	3.54	2.56	2.62	1.95	*8.20*	2.12	*0.31*	0.80	5.21	3.59	37.72
1898	4.51	2.97	1.97	1.37	1.66	2.14	1.20	2.65	3.04	4.49	3.98	3.52	33.50
1899	2.88	1.62	3.03	1.02	3.22	*0.69*	2.60	0.52	4.48	2.99	1.28	5.06	*30.30*
1900	3.82	5.21	3.80	1.13	1.22	1.22	2.97	3.69	2.90	3.39	5.32	1.26	35.93
1901	3.31	3.26	3.03	3.13	3.28	1.39	3.05	2.07	3.29	1.29	2.87	5.52	35.49
1902	4.01	2.33	1.81	2.04	1.85	4.20	4.53	1.72	2.73	3.09	1.03	3.57	32.91
1903	4.23	2.90	3.33	4.48	1.69	3.95	4.07	5.29	0.81	2.15	1.36	3.70	37.95
1904	4.78	4.32	3.51	2.79	3.12	2.83	3.87	3.41	2.11	1.93	*0.51*	2.65	35.83
1905	4.48	2.46	1.49	2.38	3.23	3.45	2.38	3.51	2.42	4.54	2.44	3.07	35.85
1906	2.17	1.41	3.89	2.01	1.34	1.77	2.42	1.82	3.43	*7.57*	1.90	3.90	33.63
1907	4.23	1.32	2.70	2.00	3.73	1.91	2.53	1.01	3.73	4.86	2.67	4.28	34.97
1908	2.90	5.18	2.59	3.60	4.08	2.45	3.40	2.85	1.06	0.98	2.23	2.92	34.24
Means	3.25	2.95	2.69	2.41	3.14	3.09	3 35	2.99	3.10	3.47	3.24	3.39	37.00

Greatest and least precipitation in italics.

MONTHLY AND ANNUAL MEAN TEMPERATURES.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	An'l
1897	25	28	34	44	54	62	74	67	63	54	40	30	48
1898	28	27	*41*	43	57	67	*73*	71	67	54	40	29	*50*
1899	25	21	32	47	56	66	70	72	60	56	42	31	48
1900	28	23	25	44	55	66	70	*73*	68	*60*	42	31	49
1901	27	18	33	46	54	66	74	72	64	53	36	27	48
1902	25	22	39	45	55	61	70	67	64	52	*48*	25	48
1903	26	27	*41*	44	60	62	69	66	64	52	38	25	48
1904	19	17	32	39	57	66	68	66	61	49	38	24	45
1905	20	18	33	41	54	64	71	68	64	53	37	33	46
1906	83	25	27	43	54	65	71	72	66	51	39	27	48
1907	26	19	35	38	*48*	62	69	66	62	48	39	32	45
1908	26	21	33	41	56	66	71	68	66	54	42	30	48
Means	24.9	23.8	31.2	42.4	54.3	64.8	69.8	68.6	62.7	51.2	38.9	29.6	46.9

Highest and lowest temperatures in italics.

If during April, May, and June we have the normal precipitation and temperature, an absence of drying and parching winds—those that too rapidly counteract the effects of the normal precipitation—and a humid atmosphere and hot sunshiny days during the period of bloom, then shall we have nectar secretion in abundance.

Note the wide variance in honey-gathering that sometimes occurs from day to day during the height of bloom. These variations in nectar secretion may be traced to variations in weather conditions.

For the better study of the conditions affecting the white-clover honey crop I present herewith portions of two tables from the Buffalo station of the United States Weather Bureau, one showing the monthly and annual mean temperature of each year as well as the mean monthly and annual temperature as determined by observations over a series of years. Also a similar table compiled as to precipitation. The mean monthly and annual temperatures and precipitations as determined from observations over a series of years are the standards of comparison with any one season, the variation from the normal which it is desired to determine. These tables are reliable only for the territory in the meteorological area surrounding Buffalo. It is not likely that the data of any two stations of the Weather Bureau are identical, as ofttimes the showers and storms are, to a great extent, local, and there are also wide variations in temperature for different localities. The portions of the tables I have used cover a period of twelve years, over which period I have a pretty clear recollection of the honey crops, and it includes several bountiful white-clover honey seasons as well as some seasons of failure of honey from this source. The correctness of my deductions as to the effect of April, May, and June precipitation and temperature can with reasonable certainty be read from these tables.

Reference to the table of precipitation for the year 1897 shows a very dry September and October, it is true; but this dry period was not sufficient to destroy the clover in view of the very nearly normal precipitation during the early summer and the unusual rainfall in August, thus making a growth that would stand a long dry spell. But the year 1898 shows but a little less than ⅔ the mean precipitation for April, May, and June, and I have a vivid recollection of a white-clover-honey failure. During the rest of the growing season, however, there was very nearly the mean precipitation, and there was undoubtedly a fair setting of clover. Again, in the spring months of 1899 we have a precipitation of but little more than half the mean for the three months, although that for May is a little above the normal. Again, the lack of moisture at the right time spelled failure of the white-clover honey crop. That year may be said to have been dry nearly all through the growing season, the precipitation for the five months from April to August inclusive being more than seven inches less than the normal. It is likely that very little white clover got started from the seed that season, and it must have been severe on the old plants. For the third successive season, April, May, and June, 1900, show a decreased precipitation, this time considerably less than half the normal. I remember distinctly the difficulties I experienced in obtaining suitable honey exhibits of the crop of 1900 for show purposes at the Pan-American Exposition in 1901. The failure of the white-clover honey crop

seemed to be as wide spread as was the drouth The summer of 1899 being unusually dry, and followed by the still dryer season of 1900, up to the end of July, and perhaps into August, the conditions were not favorable to the growth of white-clover seedlings that would yield honey in abundance the following season; but from August to the end of the season the conditions were very favorable. It may, therefore, be assumed that, after the two protracted dry seasons, the bulk of the clover that gave the crop of 1901 started after the middle of the summer. I believe New York and Ontario bee-keepers generally will bear me out in the statement that the season of 1901 gave us a bumper yield of white-clover honey. In and adjacent to Buffalo it was as good a season as any of which I have recollection. This was a bumper season clear through, and it will be noticed that it was a year of nearly the normal precipitation during the spring and summer months, except June, which shows less than half the normal precipitation. However, it is to be remembered that there were light drizzling warm rains and very humid conditions nearly every day in May—just the conditions to promote the best growth of clover, and the plants thus got a start that enabled them to pass through a short drouth in flourishing condition. It will be noticed that the temperature of the spring and summer months of this season is considerably above the mean, except May, which was almost constantly cloudy, notwithstanding which it lacks but .4 degree of the normal.

Following the season of 1901, and up to and including the season of 1905, the precipitation and temperature for the spring and summer months were comparatively normal, and we had continuously good honey seasons; and it will be noticed that the precipitation of the summer of 1905 shows it to be favorable to the setting of clover.

There was an unusually rank growth of the yearling clover that bloomed, which may have counteracted the apparently favorable conditions and smothered many of the seedlings and young plants. Fairly well saturated soil and an open winter following the summer of 1905 caused an unusual amount of heaving, and the result was that but little of alsike, white, or sweet clover survived the winter and spring; and what came through produced a growth so feeble that it can hardly be accounted for by the comparatively dry spring months with a precipitation of a little less than ⅔ the mean. Query: Does an unusually thick and rank growth of clover impoverish the soil temporarily of the elements best suited for clover, so that the soil needs a rest or change? The above combination of conditions caused a failure of the clover-honey crop in this locality in 1906, following the best clover growth (in 1905) that I have ever seen.

Again, the season from July to the end of the summer and fall of 1906 was favorable to the growth of white clover, and our hopes rose accordingly. The record of precipitation for 1907 would indicate that we ought to have had a pretty fair clover season, but it was nearly a failure. We all remember the spring of 1907, how "Winter lingered in the lap of Spring." The temperature of April was 3.4 degrees; May, 6.3 degrees; and June, 2.8 degrees below their respective monthly means, and the spring and summer season was from three to four weeks late. Apple-trees that usually bloom here from the 12th to the 15th of May did not bloom until June; and basswood, that usually blooms about the 4th of July, did not open until near the close of the month. No wonder that, with a nearly normal precipitation, enough to produce a fair honey crop ordinarily, we were again met by failure of the white-clover honey crop. But white clover grew, and thus was laid the foundation of the very satisfactory clover honey crop of 1908. Last June and July we had numerous local heavy showers, which make the table of precipitation look favorable; but in many localities the clover crop was cut short by dry weather late in June and early July.

Conditions in this locality have been propitious for a white-clover honey crop up to the present time, and I believe these conditions prevail throughout most of the region north of the Ohio River and east of the Mississippi. I doubt not that the conditions with Mr. Weaver are such as to cause him to reflect a gloomy view upon our prospects for a clover-honey crop; but viewing the matter from another point, and with past experience as my guide for the future, I would say to the bee-keepers east of the Mississippi generally that there is no present need to make preparations to "ship to the mountains." I believe that, in this locality, we have possibilities for as good a crop of white-clover honey as we have had at any time within my apicultural experience, and that the same will hold good for all similarly circumstanced. Go right on preparing for the outpouring of clover honey. The chances are more than even that you will not be disappointed.

Kenmore, N. Y., Feb. 24.

ALSIKE CLOVER.

Sown with Timothy and Red Clover it Greatly Improves the Hay, and Furnishes Additional Pasturage for Bees; How Poor Bee-ranges May be Made Good Ones.

BY BARRET PIERSON.

I have noticed your efforts for several years to have bee-keepers encourage the growing of alsike clover; but as no one has told of its most profitable culture I write you the methods used here.

For several years the agricultural press has advocated the sowing of more clover upon the farms of this country, showing that the clovers remove free nitrogen (the most expensive element of fertilizers) from the air and leave part of it in the soil, and also furnish protein (the highest-priced element of food) in the cheapest form, so that it will be unnecessary to enter into that discussion here.

Pound for pound, alsike-clover hay is worth as much for feed for cattle and sheep as either of the red clovers, and very much more for horses, because it is free from the fuzz on the stalks which makes so much dust; but as alsike clover does not grow as large as either the common red or the mammoth clover it is rarely as valuable for forage when grown by itself, though sometimes when grown by itself as a seed crop the money

returned per acre will exceed that of any other crop.

Twelve or fifteen years ago, in this immediate vicinity a few farmers began adding one quart of alsike-clover seed, for each acre to be sown, to the mixture of red-clover and timothy seed. This practice proved so satisfactory that it has been adopted by all the farmers throughout this section of Michigan, where hay is one of the most important crops.

The practice usually followed is to take four quarts each of red-clover and timothy seed, and one quart of alsike-clover seed; mix them together, and sow with a nurse crop of wheat, rye, oats, or barley, in the spring; then run a smoothing-harrow over the ground.

The quart of alsike-clover seed thus sown to the acre with the red clover and timothy will show with the red clover; and in wet places, where the red clover will not live, it will grow if the ground is not covered with water for several weeks at a time. After the first year the timothy makes the crop which is cut for two or more succeeding years, and the alsike clover will grow all this time, filling the bottom and improving the quality of the hay.

This amount does not impair the selling value of timothy hay, as it is not dusty or black, like the ordinary red clover. Timothy hay, which would pass as No. 1 without it, will pass as No. 1 with it if no larger quantities of seed than I have stated are sown to the acre.

One year taken with another, this is the most profitable plan for growing alsike clover. By sowing this amount of seed the average yield of hay per acre will be increased at least 25 per cent, as it will grow in low and wet places, and where the timothy is thin. It will last in the ground as long as the timothy, improving the value of the hay as feed, and furnish pasture for the bees, thus increasing the amount of money returned by the crop, and improving the mechanical condition of the soil.

Those who are trying to encourage its culture in their neighborhood should recommend this plan, especially if they are furnishing the seed, and they will be justified in recommending it, because it is not the theory or experience of only one man, but the practice of thousands of practical farmers. One experiment will convince any good farmer of its value, and the future crops will be taken care of by them after that.

Where alsike clover is generally grown, its value to bee-keepers can hardly be overestimated. It blooms fully one week earlier than the white clover, and lasts as long. Being grown upon cultivated soil it yields more nectar than the white clover grown by the roadsides and in the pastures; and in years of severe drouth, like 1908, where the white clover is undoubtedly injured to an extent that it will not produce a crop of honey the following year, the alsike clover in the old meadows will come through in good condition and produce its usual crop.

Flint, Michigan.

[We have been and are making it a practice to furnish alsike-clover seed free where it is to be sown in cultivated soil within ¼ mile of our apiaries. For all distances more remote, and within one mile, we furnish it at half the market price. By pursuing this policy we have greatly increased the acreage of this valuable forage-plant for bees; and as the years go on this acreage on cultivated land will be increased by the self-sowing that is bound to take place along the roads and fences.

We find that there are fields in our locality where there has been no sowing of alsike for the last ten years; yet the plants from constant self-sowing are scattered all over. It comes up in timothy fields and pastures, and it is this self-sowing that justifies the policy of furnishing seed free and at half price for a few years until alsike is as abundant as white clover.

A comparatively poor locality can in this way be made a very good one. The local farmers come to see the value of the plant from their own standpoint; and in time, without encouragement, put it in with their timothy.

If we can get farmers educated to doing this, our location east of the Mississippi will become immensely more profitable and certain; for it is a well-known fact that some seasons, when white clover fails, alsike makes up for the deficiency. When both alsike and white clover yield, the season is called a "hummer."—ED.]

SHIPPING HONEY SIGHT DRAFT WITH BILL OF LADING ATTACHED.

BY LOUIS SCHOLL.

An interesting editorial that, on p. 72. While sending honey in *carloads*, c. o. d, may be far from satisfactory, it should not discourage the shipper who sends out his honey in small lots from doing so. From an experience of many years in shipping honey in less than carload lots we have made it a custom to make all shipments sight draft, bill of lading attached, subject to examination. We have found that this is the *only* absolutely safe way for us. Consequently we have made it our *rule* from this season on to do business in this and no other way, with very few exceptions. We have had to do this because we have been disappointed a few times, not so much by people whom we did not know, but by several whom we trusted as old-time friends. In the last two seasons' shipments we lost only two accounts for honey, and both from old friends and bee-keepers, just because we trusted them with open shipments.

It is an easy matter to guard yourself against the loss of your honey shipments by the c. o. d. way. We write out all of our bills of lading and sight drafts, ship our honey, sign the bills, and bring them to the bank. If the honey is refused for some reason, which is seldom, the bills are returned by the banks; and using the bills of lading returned, the refused honey is reshipped to another point, generally near the place where it was refused. This saves having the honey returned, and we do not lose ownership of it until the honey has been paid for at the bank, which must be done before the shipper's order bill of lading can be obtained.

New Braunfels, Texas.

[For small shipments the C. O D. plan is all right.—ED.]

From "The Living Plant."

THE SKUNK CABBAGE.
This plant is valuable in many localities as a source of very early pollen.

THE SKUNK CABBAGE.

Its Value as a Source of Early Pollen.

BY G. M. DOOLITTLE.

Almost the first if not the very first thing in vegetation to appear above ground in early spring is the skunk cabbage, and I want to tell the readers of GLEANINGS something about this plant which always has been very interesting to me, especially because it is the source of the earliest pollen. If the younger people of the GLEANINGS family, who live in sections of the country where the skunk cabbage has gained a foothold will take the pains to go out in early spring into any low or marshy lands, which are the places in which the skunk cabbage thrives, they can readily find it, as these "fairy houses" stand about two to three inches high, point up, the same being much variegated in color. The main color of these hoods is a purple ranging from very light to very dark, with stripes of yellowish brown mixed in, these colors being arranged in stripes and "splotches," very much like the skin of the Northern Spy apple. The hood is very hard and tough, as well as unyielding to pressure, until enough force is given to break it, and no one, not knowing what it was, would ever mistrust that the thing had life in it, and much less believe it was the "posy-bed" of the skunk cabbage until the house was broken open, when the secret would at once be out, for the perfume of the broken house is three times as strong as that from the bruised leaves which, later on, come up around this house, and so forcibly remind us of the animal from which it derives its name. The opening is a sort of slit in the tough hood covering the flowrets, some of these "doors" being so nearly closed that the bees can not get in. I have seen two and three bees making a desperate struggle to squeeze in through this opening through which they could see and smell the pollen, while the aperture would not admit of their entering. However, the most of these hoods or coverings are fairly well open, so that they admit the bees freely.

Around nearly all of these plants is generally a mossy substance, although those which grow on higher land do not have it so plentifully. Underneath, snuggled down, and mixed with this mossy substance, is often found several somewhat elongated, pea-like-looking things, of a dark-brown color. These are the little bulbs for producing more skunk-cabbage plants; and in early spring, or during a thaw in winter, after the action of the frost has loosened them from their beds, and the thawing about them made them easily movable, they are carried off and scattered about by any and every freshet, and thus the plants are propagated from these bulbs, very much as are the wild turnips of our woodlands. Each flowret ball which is inside of every hood has from twenty to thirty little knobs on its surface. This ball is about as big as a fair-sized marble, and at each of these little knobs a little spikelet comes out, which is about three-sixteenths of an inch long, on the top or outer extremity of which the pollen-bearing flower grows. These little flowers are not over one-sixteenth of an inch in diameter, and of a lemon color, while the spikelets which hold them up and out from the little

ball are scarcely larger in diameter than a hair. To obtain the pollen the bee must go in through the door and then run or crawl about the spikelets, and between them and the hood, which, as a rule, gives hardly space enough between, so that the bee comes out pretty well covered over with the pollen, which is carried into the hive more largely on the back than in the pollen-baskets. The bees must get the pollen into their pollen-baskets without taking wing, in very much the same way that they manipulate propolis gathered from an old hive standing in the sun. I have seen as many as seven bees in one of these little houses, all kicking and rolling about till they looked more like small caterpillars in a flour-barrel than they did like bees.

The great value of the skunk cabbage is that it comes so early, for the very first warm days bring it above the ground, and the flowers in blossom. Then the hoods being of such a dark color, and right down in the moss on the ground, with only just the one little "door," makes it so comfortable for the bees inside that they are not chilled on cool or partially cloudy days, as they often are when working on the alders and willows later on, so they can go and return in safety at times when thousands are chilled and lost later on in the season, with the same degree of temperature. I have known bees to work on skunk cabbage with the mercury standing at 42 degrees in the shade, while a regular business would be made of pollen-gathering from this source at 45°. Immediately, as soon as this pollen comes in, the queen begins to "spread herself" at egg-laying, and the prosperity of all reasonably good colonies is assured. For this reason I value the skunk cabbage more highly than any other pollen-yielding plant or tree.

I never could find any trace of honey from skunk cabbage. So good authority as our pioneer in bee-keeping, Moses Quinby, in his "Mysteries of Bee-keeping" (p. 78), says, speaking of skunk cabbage with other pollen-producing flowers, "These afford only pollen," and I have found Mr. Quinby more nearly correct than the most of our writers on apiculture. The time of blossoming of this plant in this locality is from March 20 to April 15, according to the season, the bloom lasting from three days to a week, just in accord with the weather, and there is nothing with which I am acquainted that is so eagerly sought by the bees, and nothing in the pollen line which so greatly stimulates brood-production.

Borodino, N. Y.

THE ORANGE COUNTY PARADE OF PRODUCTS.

Bee-keeping Represented in a California Carnival.

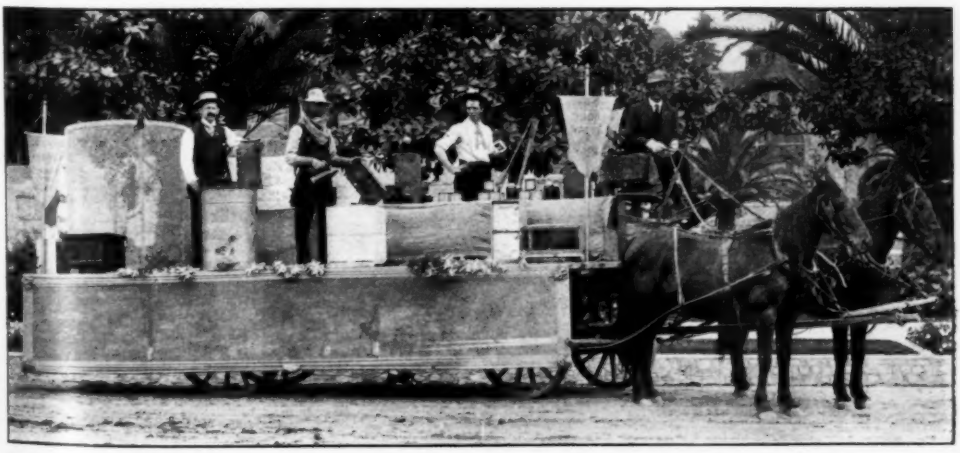
BY ROY K. BISHOP.

Instead of a fair, Orange Co., California, celebrates by a street carnival known as the "carnival of products," or parade of products. In this parade, which takes place in the county-seat (Santa Ana), each industry is represented by a float—for instance, oranges, lemons, peanuts, celery, and many more. The engraving represents the bee industry of our country, which is of considerable importance. The object was to show as much of the work of the apiary as possible.

John Oderlin, who has been engaged in bee-keeping here for 30 years, is the driver — in fact, was the master of ceremonies. The one with the veil, Mr. Ellis, is taking off the honey, while R. K. Bishop is running the extractor. Frank Maag is folding sections.

In this county there are about 5000 colonies. The chief sources of honey are the black and white sage. We have some honey from the following, though not enough to give big extractings, except oranges: Phacelia, fillaree, alfalfa, mustard, sunflower, sumac, eucalypts, and oranges. In the mountains there are various shrubs that yield some honey that is utilized to build up on. In the valley where my bees are located we have now a very good flow from *Eucalyptus globulus*, and the bees are storing quite a bit more than they need for brood-rearing. Oranges begin to bloom the first of March.

Orange, Cal.



"FLOAT" REPRESENTING BEE-KEEPING IN THE ORANGE COUNTY INDUSTRIAL PARADE, CALIFORNIA.

SHEDS FOR APIARIES.

A Low Permanent Structure to Protect the Hives in Winter.

BY MILTON F. SMITH.

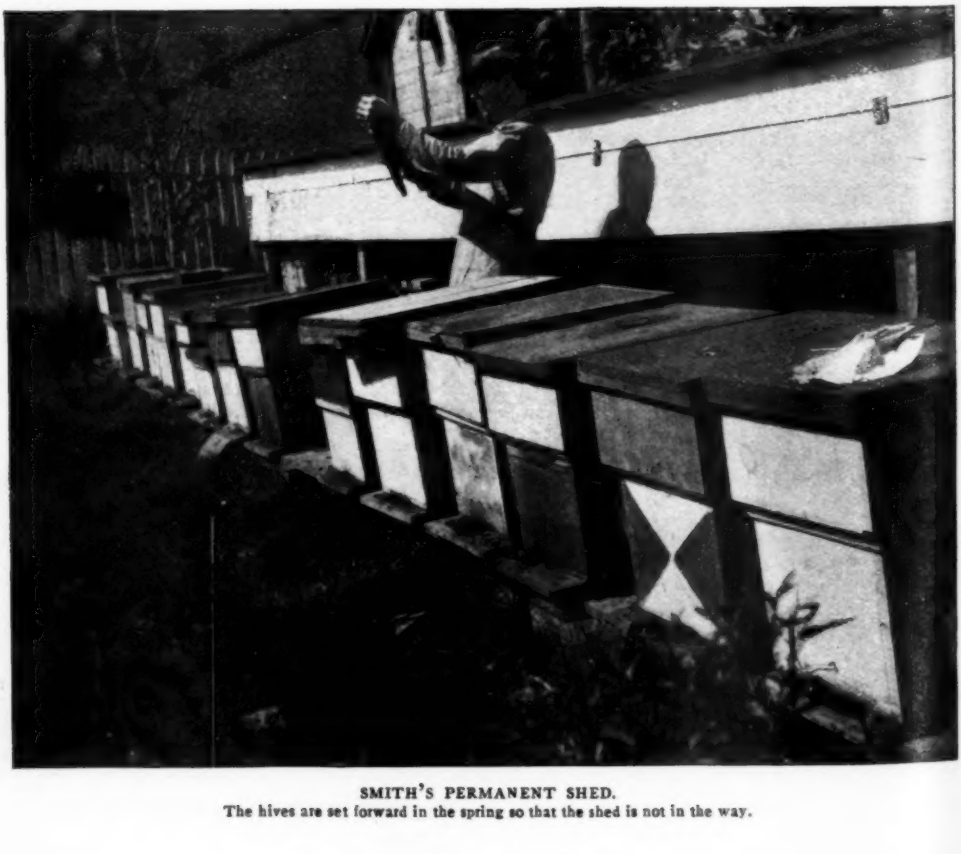
I have been interested in the keeping of bees for the past forty years, and have tried all manner of ways of keeping colonies over the winter in the most successful way, for our winters are sometimes very severe. At last I found a way that is quite successful. It is shown by the engraving. The shed is substantially built, and is stationary. It is long enough to pack comfortably about 25 or 30 hives. It is built high enough to hold two tiers of hives, but this has not proved successful; for during warm days of winter, when the bees are flying, they too often become confused, and do not find the proper hive, and are lost.

In packing them for the cold weather of winter I use any thing that is dry and warm, usually coarse sawdust, and planings—that is, fine shavings that I get from a cigar-box factory next door. I put this all around both sides, top and back, even packing down the front, for I have movable doors for the front of the shed. I have also arranged that on warm days (that often come in the middle of winter) I can easily remove the lower board of the front and allow the bees freedom. In this way I have kept my bees over very severe winters without the loss of a single colony. Last fall I had a number of very weak colonies. I fed them sugar syrup early in the fall, and packed them for winter in due season. This spring every one came out good and strong.

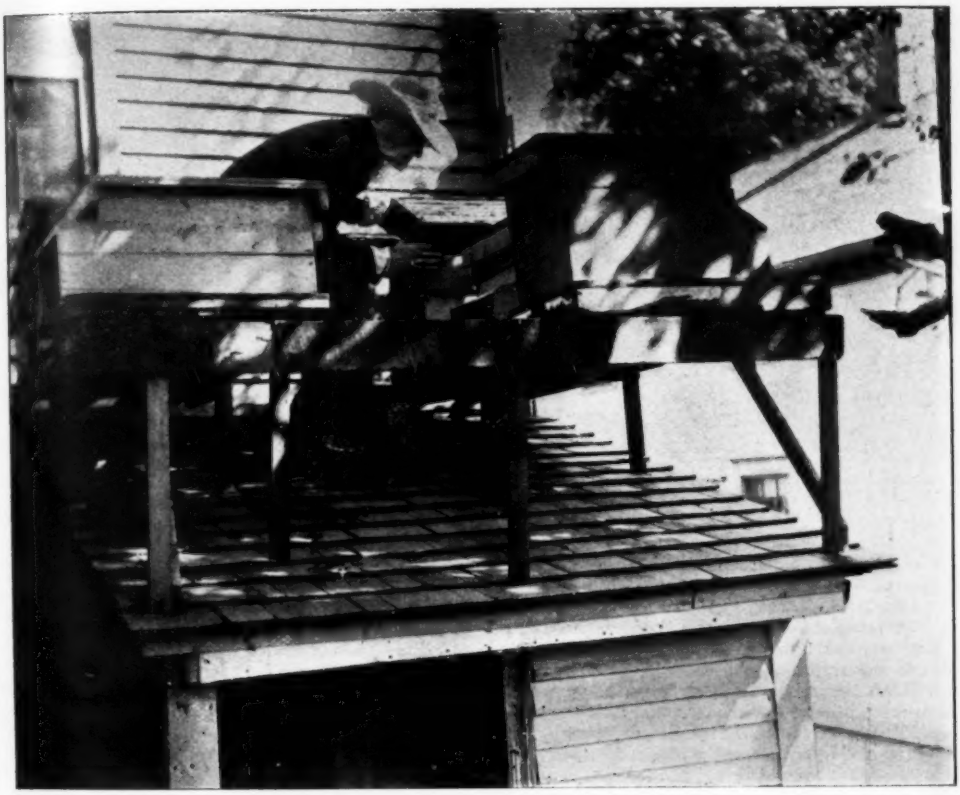
When I have more colonies than the shed will hold I put them in a movable shed that I have made for this purpose. It is so arranged that I can put it away in the summer, out of the way of other things. Each side, roof, etc., is made to pack away flat—a sort of take-down arrangement. It is put together in a moment by means of hooks. The main shed is so arranged that the back part can be taken off in the summer, and this gives the bees perfect freedom and air; but I usually move the hives out a few feet in front of the shed, as shown in the cut, to give me more freedom for handling them.

Bees may be packed for winter in different ways; but it has been my experience that it is more important to have the hives kept dry than warm. One winter I had a lot of corn fodder, and put enough around to keep out all wind and cold; but the snow and rain fell upon this pile of fodder and made it damp and wet, and the result was any thing but encouraging. This is the fault with a cellar. Most cellars are warm enough, but they are too damp.

Red Lion, Pa.



SMITH'S PERMANENT SHED.
The hives are set forward in the spring so that the shed is not in the way.



AN APIARY ON THE ROOF OF A WOOD-SHED.
From four colonies, 300 lbs. of honey was taken.

BEES ON THE ROOF OF A WOOD-SHED.

300 Pounds of Honey from a Space 7 Feet Square.

BY PERCY C. SHERMAN.

For some time I have owned a couple of colonies of bees, but have done very little with them. We have no ground space for them, and, besides, we live in a double house with a neighboring house within 20 feet of us. Though such conditions are unfavorable for bee-keeping the thought of putting the bees on the roof of a wood-shed occurred to me; and, though the idea was laughed at, I built some framework and placed upon it my two hives with two additional.

Though the bees were just over the door, as shown in the picture, the only time they give us any trouble was after I had robbed them. Then they would be "numerous" for a short time.

I reached the hive by way of an apple-tree close by, or through the window above, in which the screen shown was hung on a hinge.

From this roof I took about 300 pounds of honey from four hives (quite good returns from a roof 7 feet square, ordinarily considered useless for producing any thing.)

Adrian, Michigan.

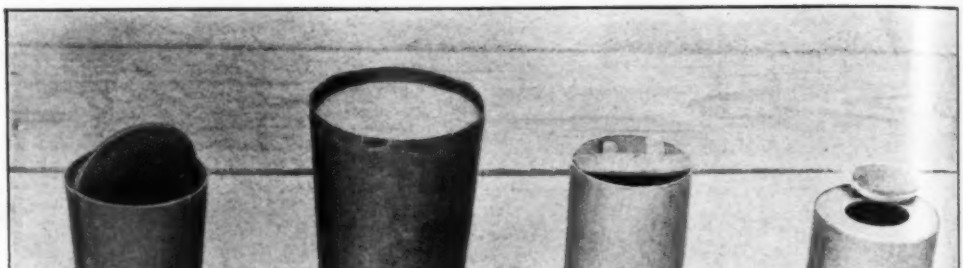
[Bee-keeping, unlike poultry-keeping and a garden, is adaptable to almost any circumstances. There are many small apiaries in our larger towns and cities located on roofs of the buildings or in the small back yards. In almost all cases of this kind fair returns are secured. The experience as above given is no exception.—Ed.]

PAPER BOTTLES FOR EXTRACTED HONEY.

Can Paper Milk-bottles be Used for Holding and Shipping Honey?

BY J. E. CRANE.

For years I have been looking for a practical package, costing not over a cent, that would hold a pound of honey. I have recently found such a package, but it holds more than a pound, and can be had for half a cent. I refer to the paper bottles used now for milk. It seems to me that these will answer as well as tin, and they can be sealed more quickly and safely than almost any glass container that I am acquainted with. Think of a box containing two dozen packages for honey in a re-shipping-case, for 25 cents! I believe that these packages would answer where tin is now used. They are used very extensive-



DIFFERENT FORMS OF PAPER MILK-BOTTLES WHICH MIGHT BE IMPROVED SO AS TO BE USED FOR HONEY.

ly in the milk business, and, of course, are given away with the milk. I believe they could be used for honey just as well.

The bottles are made of strong spruce paper, glued and paraffined. They would be especially useful in retailing honey from house to house, or for holding candied honey, as it could be run into these bottles before it is hard. The cover could be left so as to be easily removed, so that the honey might be tested if desired. The illustration shows several forms of these packages.

While these bottles might not be very valuable for shipping honey, I feel sure that they could be improved so as to be practical. Possibly they would have to be made thicker for honey than for milk. The ends should be put together with glue, and only the inside paraffined, while the outside should be covered with a nicely printed label. In the end the cost might amount to a cent each; but even this would be much cheaper than tin.

Middlebury, Vt.

[We believe this paper milk-package is a good thing. There is no reason why it should not be used very largely by those who do a retail business in extracted honey. It is by far the cheapest self-sealing package on the market; and, what is more, it can be obtained almost anywhere. Apply to your milk-dealer.—ED.]

CLOVER-HONEY PROSPECTS OF NORTHERN OHIO FOR 1909.

BY J. E. HAND.

White clover is practically a surface feeder except the original plant, which dies after it blossoms the second year. The runners do not have tap-roots, and are, therefore, unable to survive a very severe drouth. On the other hand, red clover, after it once gets firmly rooted, is seldom killed except by heaving out of the ground by the action of frost, which is chiefly confined to low ground and heavy clay soil. However, new seedings of all the clovers are frequently killed by a severe drouth early in the season before the roots have become thoroughly established. While the drouth was very severe in this section, and continued well into November, it did not begin in earnest until August.

I have just been over our nine-acre field of new alsike and red-clover seeding for the second time since these articles began to appear. We have a fine stand of clover, with the exception of a few of the highest places. That white clover is severely injured in pastures and high places is very evident. However, in meadows, along roadsides, and in out-of-the way places, where the plants were protected by overlapping foliage, there is enough white clover in sight in my location, with the splendid outlook for alsike and red clover, to give us an average crop in 1909, especially if we get a lift from basswood, as we generally do.

The prediction that there will be no clover honey east of the Mississippi has no foundation for its support, and reminds one of some weather prophets who foretell the weather a year in advance. There were local showers here and there, all over the country, and it is quite possible that many bee-keepers may by moving their apiaries a short distance secure a good crop of honey.

Birmingham, Ohio.

[Many who have written us seem to feel that white clover, even though it has no tap-root, will stand more drouth than those clovers that have a tap-root and a bunch of rootlets in one spot. The white clovers branch and rebranch, and at every intersection have a bunch of roots. The fact that one plant may have so many sets of roots in different spots is regarded as a protection that the other clovers with only one root or set of roots do not have. For instance, The A. I. Root Co.'s plant is strong because it has so many branches and rootlets. These latter, you know, feed the old plant with constant new life.—ED.]

WIRE-CLOTH SEPARATORS.

Another Bee-keeper Who Believes that this Form of Separator has too Many Advantages to be Neglected.

BY H. H. ROOT.

Mr. W. C. Sorter, of Wickliffe, O., has been experimenting for several years with wire-cloth separators. He has found that they are quite expensive, but, at the same time, he believes that they have a great many advantages. Fig. 1 shows different forms of separators that Mr. Sorter has tried in the effort to produce a separator that would hold its shape and yet not cost too much. He believes that, if the manufacturers of wire cloth could be induced to incorporate a stiff wire on both sides of a strip just wide enough to make separators, the problem might be solved. He thought that possibly something in the nature of a heavy wire combined with a selvage edge might be obtained at no great expense.

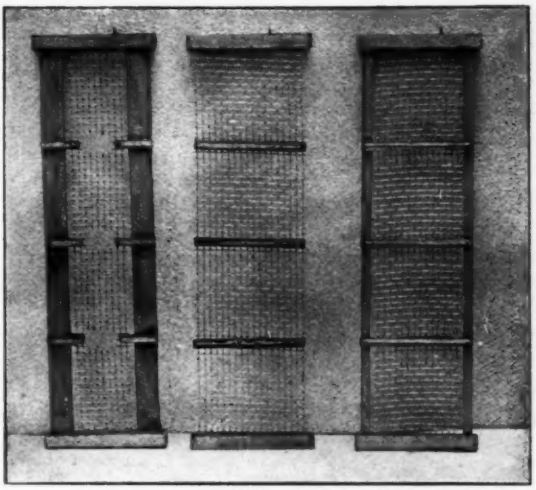


FIG. 1.—DIFFERENT FORMS OF WIRE SEPARATORS USED BY W. C. SORTER, WICKLIFFE, O.

The principal advantage of the wire-cloth separator, as Mr. Sorter looks at it, is that the sections may be filled more rapidly, and that each section is filled fuller than those between any other kind of separators, so that it contains an ounce or two more honey than the same size of section used with the average separator. It has been found that the bees bring the cappings of the comb closer to a wire-cloth separator than to either the solid or slatted form. To prove this Mr. Sorter showed us several sections filled between combination wooden-slat and wire-cloth separators. Fig. 2 shows two of these sections, also the particular style of separator just beneath that was used. It will be noted that these are 4X5 sections, and, of course, in the supers they stand on the ends rather than on the sides, as shown in the engraving. The combs were bulged slightly in the middle, which part was covered only by the wire cloth. That part of the comb nearest the tops and bottoms of the sections was not built out nearly as close to the edge of the section. The same results were secured in all supers where wire-cloth separators were used; that is, the sections were filled fuller, so that they weighed an ounce or two more. The combs were not bulged enough to go beyond the edge of the section, but were built out a little fuller than those in sections divided by the regular slatted separators or fences. With separators made wholly of the wire cloth, the whole comb is uniformly thicker.

Some objection has been made heretofore because the bees attached combs to the wire cloth; but Mr. Sorter says that, although once in a while he has noticed combs attached to the wooden slats, he has never seen them attached to the wire cloth, and he thinks that any trouble from this source would be very slight.

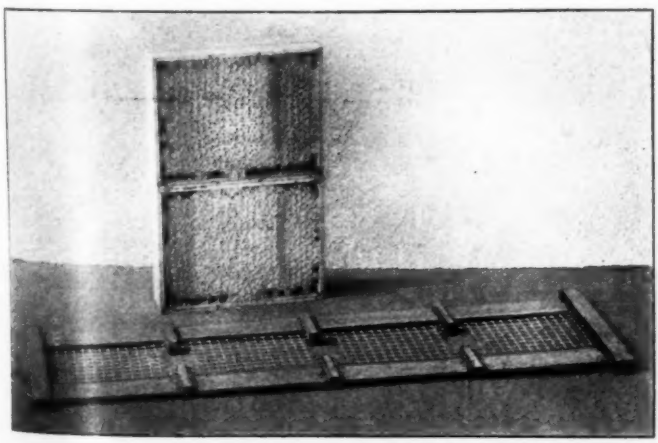


FIG. 2.—COMB HONEY PRODUCED BETWEEN WIRE SEPARATORS.

It will be noticed that the central part of the comb, which was covered only by wire, was considerably thicker than that near the top and bottom covered by the wooden slat. This shows that sections filled between the wire separators will contain more honey than those between ordinary separators.

Of course, the wire-cloth principle as applied to separators is not new. It was made the subject of a patent by N. N. Betsinger, in the early 80's, and in later years has been used with much satisfaction by S. D. House, of Camillus, N. Y. Mr. House reports that sections are better, plumper, and more evenly filled behind wire-cloth separators than behind any others — exactly corresponding with Mr. Sorter's experience.

FIG. 3.—SORTER'S PLAN FOR HELPING THE GROCER ADVERTISE HIS HONEY.

On the under side of the covers of the shipping-cases paper is pasted containing the words as shown.

The reason that they are not more generally used is the expense.

In this connection it may be well to call attention to an ingenious scheme which Mr. Sorter has for advertising. On the under side of the covers of his shipping-cases he pastes a large white paper on which is printed the words "New Whiteclover Honey," in large black letters. When the grocer removes the covers from the shipping-cases he turns them over and has a very neat display card, so to speak, in order to attract the attention of his customers.

It is interesting to note, also, in Fig. 3, the different color of the honey shown back of the glass. The two darker sections were filled with goldenrod honey, and were left on the hives longer than necessary until the cappings became quite yellow. The photograph exaggerates this difference in color somewhat, but nevertheless the two shades are far from being alike. There is as much difference between travel-stained and white comb honey as there is between shop-worn and fresh goods of any kind. The strain of bees, the source of the honey, the type of separator used, and the length of time that the honey is on the hives, are all factors that control the color of the cappings.

CATALPAS IN OKLAHOMA.

BY N. FRED GARDINER.

The photos which accompany this article aptly illustrate some of the possibilities of our new State. There is scarcely a line of business activity to which Oklahoma has not some unusual attraction to offer. When trees like the ones in the picture can be grown in such a short time, it is evident the land-owners can do much to postpone the impending lumber famine if they can be aroused to the occasion. It also indicates that soil that will produce such growth will grow nectar-producing plants, so that bee-keeping can not be altogether a failure.

The trees shown are catalpa, and are four years old from seed. The individual tree is over 15 feet high, and more than 4 inches in diameter a foot above ground. This is about an average specimen of the 75 trees surrounding my grounds. The first season's growth was about a foot. They were then set where they now stand, and many

CATALPA-TREES IN OKLAHOMA, FOUR YEARS OLD FROM SEED.
Courtesy Oklahoma Farm Journal.

were over 8 feet high at the end of the second year's growth.

The wind does not cause these trees to incline from the perpendicular as it does many other varieties, but they grow perfectly straight. They are being grown to build a permanent fence, and they can soon be utilized for this purpose. Clean culture has been practiced at all times, and the dust mulch maintained.

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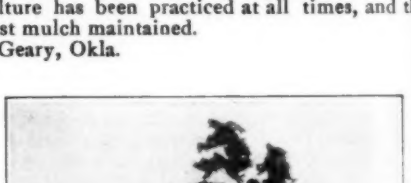

RAPID GROWTH OF CATALPA-TREE, FOUR YEARS OLD FROM SEED.
Courtesy Oklahoma Farm Journal.

DEADMAN'S CONCRETE RUNWAY LEADING DOWN INTO THE BEE-CELLAR.
Ordinarily this runway is kept covered with a light roof made in two sections so as to be easily removed.

A PNEUMATIC-TIRED HIVE-CART.

BY G. A. DEADMAN.

The cart here shown is especially adapted for taking colonies to and from the cellar, although it is very handy for many other purposes as well. I have had it in use for two seasons, and I find it very valuable; for with it I can carry the bees from the cellar alone with a great saving of time, and I am always less tired than I used to be when carrying out the colonies in the ordinary way with a helper.

As to the construction of this cart, I will say that it is simply a framework 5 feet long, clamped to parts of two old bicycles, as shown. This framework is wide enough so that, when the hives are placed on it, they will not project so as to interfere with the hinged sides which fold up to prevent the hives from sliding off. End pieces are also hinged to the framework in the same way. Both the sides and ends are held up by means of hooks and staples.

The floor of the framework — that is, the part on which the hives rest — is made of two ½-inch boards about 5 inches wide, padded on the top. These can be easily removed should the cart be needed for some other purpose.

The forks of two old bicycles are firmly clamped to the framework with ⅜-inch bolts. These forks of bicycle frames can be bought for about the price of old iron, since it is only necessary that they hold the wheel firmly.

This construction is very simple and inexpensive, especially if one has two bicycles, for then it is not necessary to buy old front wheels for the cart since those on the bicycle can be used, the change being made in a minute or so. The season for bicycle-riding is usually about over when the bees are placed in the cellar, and has not yet begun when they are taken out in the spring; but the change can be made so quickly that, in case the cart is used during the summer, very little time is needed to take the wheels from the bicycles and attach them to the cart.

If quick detachable tires are used they can be quickly repaired in case of a puncture. The wheels are, of course, ball bearing, and therefore turn very easily. I can carry three hives at a time with very little exertion.

If the apiary is far from the cellar, a hive-cart might be advantageously used, even if it could not be taken into the cellar. As I keep fruit and vegetables also, in one part of the cellar, I constructed a concrete runway leading down into the cellar so that I can run the cart up or down. This runway is easily built, and costs but little more than ordinary steps. The roof or cover for this runway is in two sections, for convenience in handling, and is made of light material, covered with paroid roofing paper. The cellar is about 4 feet below the ground, and the length of the runway 18 feet.

I have found my hive-cart also valuable when unloading colonies at an out-apiary, when I do not dare to drive a team close to it.

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framework at each yard so that the same set of wheels would do for all of them.

Brussels, Ontario, Can.

DOUBLE-TIER SHIPPING-CASES.

More Arguments in Their Favor; Why the Double-tier Cases are Easier to Handle.

BY DR. C. C. MILLER.

On page 120, Mr. Editor, you have evidently tried to discuss the matter of double vs. single tier cases in a spirit of fairness; but the last word has not been said, and it is so important to decide just what we do want that it is worth while to take up more space with the discussion.

You don't "quite see the force of the argument in No. 1." If Mr. Foster will pardon me for butting in, I'll try to "show" you. The hand-hole may be just as near the top in one case as in the other. In the shallow case it is in the center (measuring from top to bottom), hence at the center of gravity. So in handling the cases rapidly there must always be more or less effort on the part of the fingers to retain the case in a horizontal position, and that constant effort tires. In the double-tier the hand-hold is above the center of gravity, hence no trouble. That, however, is not the most important thing.

You can lift a much heavier weight close up to you than you can at arm's length, can't you? And it's much harder to lift the same weight at arm's length than close up. The further off the weight, the harder the lift. Very well. Don't you see that the hand-hold of the shallow super is further from you than that of the deep one? So it is possible that Mr. Foster is right in saying you will be twice as tired handling a carload of shallow cases as you will handling a carload of deep ones.

No. 2. "Why should any one try to pick up a shipping-case by the corners?" Well, why should they lay a double-tier case on its side, as you say they may? But "there's a reason" for the corner handling. It's easier, especially if two are carried at a time. Try it and see. Then, again, in loading a car it often happens that A hands the cases to B. If A lifts the case by the hand-holds, did you ever see B take hold the same way?

No. 5. A single-tier case on a show-case "would be less liable to break a glass than a double one of the same weight." Why under the sun should you pile any thing of that sort on the glass of a show-case? That glass is meant to be seen through, and not to be covered up. I never before heard of piling honey on the glass of a show-case.

"The single-tier can be piled up with less danger of toppling over than a double-tier." Is there any danger of either toppling over? I've piled dozens or hundreds of piles as high as I could reach, and there never seemed any danger.

That dray business. I don't see why one kind should be put on the bottom more than the other; "and if heavy goods of miscellaneous shapes and sizes were piled on top, more damage would be received" by the single than by the double tier, I am sure; for the same reason that you say "that if one steps on the single-tier case his weight would do more damage to the sections in such a case than to those in a double-tier of the same capacity."

"Careless freight-handlers have a tendency to lay the double-tier on its face." I can't think of any answer to that that is entirely satisfactory. To be sure, the fool that would lay a case on its face would chink in single-tier cases face down if there happened to be a narrow place for them; but he wouldn't be likely to put a whole load of single-tiers face down. And that very thing happened to a load of double-tiers for me once. But the railroad paid for them, so I was nothing out. Say, come to think of it, that's an argument, after all, in favor of double-tiers. Ship all honey in them; let them be loaded face down, if need be; then collect. Make good honey that much scarcer, and stiffen the price. Great scheme.

A strong argument in favor of the double-tier has not been directly mentioned, although you, Mr. Editor, refer to it indirectly. It is that it will cost less to case a ton of honey in double-tiers than in single-tiers.

But the strongest of all arguments in favor of double-tiers has not been given, although I think Mr. Foster had it in mind in No. 4. It is the greater beauty of a *pile* of honey if in double-tiers. You've got to see it to appreciate it; but if you had a pile of single-tiers side by side with a pile of double-tiers, a single glance would settle it. I can't show it to you in words, but I may give you a little idea of the difference. You see, in the double-tier cases there is a middle bar of wood an inch wide. In place of that will be in the other pile the wood at the lower part of one case and the wood at the upper part of the case below it—2½ inches of wood in one case against one inch of wood in the other—more wood showing in the single-tier pile, more glass in the other. I wish, Mr. Editor, you could see the two piles side by side, and see how much more woody the pile of single-tiers looks.

Marengo, Ill.

BUCKWHEAT CAKES LIKE MOTHER USED TO MAKE.

BY EUGENE SECOR.

On page 40, Jan. 1, Mr. Barnes wants a recipe for making buckwheat pancakes. I am glad he acknowledges that the pure-food law in Iowa means somthing, in that it enables him to get unadulterated flour. I have evidence of that fact also. We are using, this winter, buckwheat flour which is just as good as we used to have back in York State. It has not always been thus here in the West. I may be permitted to say, parenthetically, that there is not so much *stuff* on the market here called *honey* as there used to be, either.

When I read Mr. Barnes' query I inquired of the women I board with how they prepared the batter for pancakes. This is what they said: To start the batter for a family of four we use about a pint of sweet milk to two cups of flour, and warm water enough to make the batter thin, and about one-fourth of a yeast cake. Mix the day before needed, and keep in a gallon jar be-

hind the stove, to sour. In the morning, when pancakes are wanted, pour out most of the batter into a shallow pan, but always leave enough in the jar for a starter for next time. Thin the batter before using, if necessary, with warm water. Milk is better to mix with over night, because the pancakes brown nicer if milk is used. Use half a teaspoonful of soda each morning, or enough to sweeten the batter sufficiently, stirring rapidly. Mix batter in the jar over night, always using milk if possible; and it may be well to set the jar in a pan or something to catch the overflow, for if the batter rises as it ought to it may climb over the sides before morning. When it does that you may be sure it is all right.

The pancakes may not be just to the taste the first time, as it takes a day or two to get the growth of the proper bacteria. When the batter in the store jar gets just right it ought to remain so all winter, with perhaps a little yeast added occasionally, if the batter doesn't rise nicely. It isn't necessary to keep it behind the stove all the time after the culture is started and is satisfactory.

One may use all buckwheat, or part wheat flour if he wants to make the buckwheat flour go further. You know what the song says:

Make the batter runny;
Cook 'em quick, and bring along
Lots of cream and honey.

Did you ever try *cream* and honey on pancakes instead of butter and honey? If not, suppose you try it. Of course, this is assuming that you live in the country where real cream grows, and not in town where it always seemed to me that milk is so homesick it has the blues.

We *eat* honey at our house. Whether it is because we have something good to eat it on, or because it doesn't cost any thing, we somehow get away with about a pound of comb honey a day the year round in a family of four. And then with two families of grandchildren, and some other friends who have appetites for Nature's most delicious sweet, we do our part toward relieving a glutted market by eating a lot of our own product and by creating a taste for honey in others.

Buckwheat cakes and honey! How they make me forget the discomforts of winter, the biting cold, black diamonds, steaming furnaces, fur coats, and mufflers! They feast my imagination with the sight of opening orchards of pink and white—resurrected in beauty out of the once dead cold earth. They carry me back to the fields fragrant with clover-blossoms and musical with the hum of bees. I hear the songs of nesting birds and the patient cropping of contented cows. They suggest the pendent creamy cups of flowering lindens, inviting nectar-loving Miss Mellifera to share the proffered hydromel while the sun of opportunity shines. They open the door of memory, and show me whitened landscapes of blooming buckwheat that fill the air with sweetness and the heart with hope of a coming harvest.

Ah, buckwheat cakes and honey! Not only does the sissing griddle sing of the poetry of country life, but they twain (buckwheat cakes and honey) give pleasure to the palate, health and strength to the body, and sweetness to the spirit.

Forest City, Iowa, Jan. 12.

[Hon. Eugene Secor was once the efficient General Manager of the National Bee-keepers' Union, and later called the National Bee-keepers' Association, as it is to-day. He has also written various poems on bees and other matters, some of which have been set to music and sung at our National conventions. We are especially glad to hear from him again.

Here is another recipe that our women folks say is a good one, and we reproduce it here.—ED.]

RAISED BUCKWHEAT CAKES.

Take a small crock or large earthen pitcher; put into it a quart of warm water or half water and milk; one heaping teaspoonful of salt. Then stir in as much buckwheat flour as will thicken it to a rather stiff batter. Lastly, add half a cup of yeast. Make it smooth; cover it up warm to rise over night. In the morning add a small level teaspoonful of soda dissolved in a little warm water. This will remove the sour taste, if any, and increase the lightness. If allowed to stand until it bubbles there will be no use of putting the yeast in the batter.

JESSE W. THORNTON.

North Yakima, Wash.

HONEY PRICES.

The Lack of Intelligent Co-operation is to Blame for Low Prices.

BY SEBASTIAN ISELIN.

I have read with great interest the remarks of Mr. Roy Stevens in regard to the San Francisco quotations on page 67, Jan. 15, for I am the man who put that honey on the market, which was retailed at 3 sections for 25 cents. Oakland and San Francisco commission firms refused to offer as much as 6 cts. per comb for this honey, and so I sold some 1100 lbs. to a local retailer at 6 cts. The term "choice comb honey" is, however, somewhat misleading, since these 1100 lbs. comprised all the light weight and candied sections of a lot left over from 1907, the shipping-cases being returned to me. Although I know that it does not pay to raise comb honey at such low prices I was well satisfied with the deal.

As to the San Francisco quotations, I must say that of late they have taken a tumble, and now seem to be nearer the actual market prices than ever before

Since New Year the market is flooded with white and light amber Nevada comb, which is quoted at 8 to 14 cents. I am of the opinion that, if the bee-keepers of Nevada were organized, and knew the conditions of the market, they could have obtained from 12 to 15 cents for this honey.

But it is not only in Nevada that organization and co-operation of the bee-keepers are needed. Those in the vicinity in which I live failed to put in an appearance at a meeting called for the purpose of organization some time last month, notwithstanding the fact that, as a rule, they are badly misinformed as to the prices prevailing. For instance, last summer at one time honey was so scarce here that I could easily obtain 13 cents

for the best of my dark comb, and was told to bring all I possibly could take from the bees, at that price. When I appeared on the scene again, somebody had just brought in a very fancy article of white comb honey and offered it at 10 cts. per comb, and I could not expect the retailers to pay me any thing like 13 for my much darker honey any longer.

Had the other party known the condition of the honey market he could have asked from 15 to 17 cts. for his grade of honey and could have sold lots of it at that price. Later in the season a bee-keeping farmer of my locality traded some honey for 8 cents (took its value in groceries), where I had obtained 10 cents in cash for a similar grade of honey, varying only in so far as mine was clean of propolis and dirt, and the other man's was not.

And, again, as I accosted the buyer of a grocery firm which has handled my honey on and off during a good many years, he said, "I am sorry, but your price is too high," showing me the price list of a city jobber, a firm which quoted: "Nevada comb, water-white, 12½; ditto, light amber, 8;" whereas I had asked 10 cts. for the best of my dark comb.

Thus I find the lack of co-operation among the producers of nature's noblest article of food apparent on every hand. When will the bee-keepers wake up and attend to the quoting of the markets themselves, instead of letting somebody else make the prices for them?

I regard it as highly desirable that we pay some attention to questions of this kind before we break our necks in trying to obtain larger crops from year to year, while honey, our product, is going a begging the country over.

Stockton, California, Feb. 11.

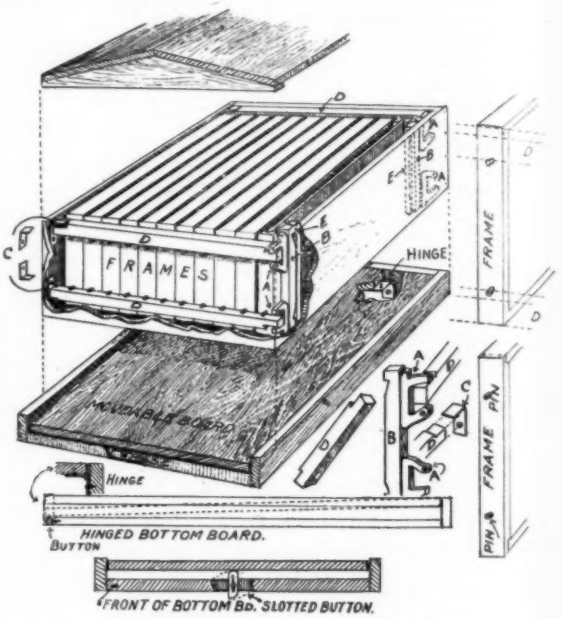
A NEW REVERSIBLE HIVE.

BY CHAS. HURST.

The illustration shows my reversible hive, to be used in connection with a comb-honey super. I think this hive is the easiest manipulated reversible hive now made, as the reversing can be done by lifting off the cover and reversing the body, frames and all, with one operation; and it is not necessary to reverse the hive back again in order to take out the frames. The reversing is done without disturbing any of the inside fixtures, and all is done so quickly that the bees hardly know it. I believe that a larger crop of honey can be secured by reversing at the right time.

The frames have two pins at a certain distance from top and bottom. In putting these frames in the hive the pins at the bottom of the frame rest on the holder D; then to lock the frames in one end of the frame-holder, D fits under the angle C; the hook A slips over the other end of the frame holder D, and the piece of wood B slides behind the hooks, and the frames are securely locked for reversing. The bottom-board needs no description except that it is on hinges at the back, and the front can be moved up and down to give any desired depth of entrance, and held in place by button and thumb-screw in front of the board.

Buffalo, N. Y.



HURST'S REVERSIBLE HIVE—PATENT APPLIED FOR.

A, small metal hook; two in the two corners of hive on one side. C, metal angle; two in each corner on opposite side. D, wood strips forming supports for frames.

[From 1882 on till 1885 the whole bee-keeping world (on this side of the Atlantic at least) was very much stirred up at the big possibilities that might accrue from reversible frames or reversible hives. All sorts of extravagant claims were made; and while there are advantages in having a *frame* reversible, there is but very little gained in having the hive made so. The chief advantage in reversing is to get the comb built clear down to the bottom-bar. When it is reversed so that the bottom-bar is up, the bees will fill in the gap by building the comb up to what is now the top-bar. After that it may be put back to normal position. There is another incidental advantage in that bees will sometimes, when the comb is reversed, carry the honey out of what is now the bottom, and deposit it in the supers; for it is against bee nature to store honey next to the bottom or entrance. We say *sometimes*, for they will not *always* carry it up. The hive above shown is similar in principle to the Danzenbaker in that it employs a pin support, and to that extent would be an infringement of the Danzenbaker patents. Instead, however, of using a double set of pins the Danzenbaker hive uses a single set. In another way the hive is like the reversible hive brought out by J. M. Shuck and patented by him in 1885. But of late years we have heard nothing of that hive nor of reversible

hives in general, although reversible frames are used quite extensively. We do not like to throw cold water on a correspondent's idea; but if history repeats itself, and it generally does, he will find that the slight advantage he will gain in a reversible hive will be more than offset by the expense of the equipment. There is so little real advantage in the reversible feature that it hardly pays to construct a whole hive with that end in view.—ED.]

PRACTICAL INSTRUCTIONS FOR BEGINNERS.

The Selection of the Necessary Equipment.

BY E. D. TOWNSEND.

I would recommend that the beginner commence his bee-keeping career with the production of comb honey, and that all increase be made by natural swarms. Gradually the production of extracted honey can be taken up. I know it is generally considered that extracted-honey production is more easily learned than comb-honey production; and I admit that, if the beginner were to commence the season with half of his colonies worked for comb honey and half for extracted, the half worked for extracted honey would probably be the more profitable that season; but there are many pitfalls in the production of extracted honey not found in the production of comb, and the beginner might be the loser in the end if he produced extracted honey from the start. A part of the danger lies in the fact that, in producing extracted honey, much of the increase has to be made artificially. Besides this, one not entirely familiar with the business might allow more extracted-honey colonies to starve than he would comb-honey colonies, for the latter will have a good stock of the early or better quality of honey for winter stores. In the case of colonies run for extracted honey, on the other hand, the early and better honey is more likely to be placed in the upper story, which usually contains an abundance of comb room. It is true that sugar syrup could be fed to make up this deficit; but this would only add another burden, which the beginner had better avoid at the start.

All artificial-swarming methods should be avoided for the first few years until the beginner has more experience, and until some of the known principles are learned. After this, these other principles of bee-keeping can be taken up.

WHAT HIVE TO ADOPT.

If more comb honey than extracted is to be produced the first season, it will be necessary to buy rather more supplies. I assume that either the eight or ten frame hive will be adopted, containing frames of Langstroth dimensions. I again urge the adoption of the ten-frame hive, knowing that it has every advantage of the eight-frame and some additional good points besides. The hive that we would order is the regular Dovetailed hive for comb-honey production, having a reversible bottom-board made of ⅞-inch material. These bottom-boards are much superior to some that have been on the market in former years. We have used very similar ones for the past twelve years, and know that they are good. The super of this hive should contain 4¼×4¼×1½-inch plain sections and fence-separators. In my opinion, there is no better section on the market to-day than the 4¼-inch square plain section.

If four good colonies of bees are bought the first season, and these colonies and the increase are to be put into new hives, about ten hives will be needed. There should be ten hive-bodies, ten covers, ten bottom-boards, and twenty supers; and all the inside furnishings should be included. The frames should be pierced, and the wire should be sent for wiring them.

If the supers are used as we use ours, extracting-frames will replace the outside section-holders in each super. These frames are made the same size as the section-holders, but they have a top-bar. Both top and bottom-bars are ⅞ inch wide, the top-bar being ⅜ inch thick, and provided with a beveled groove and wedge for fastening the foundation. These extracting-frames should be pierced for two wires, and full sheets of thin super foundation should be used in them.

As the supers, as ordered, do not include sections, 1000 4¼×4¼×1½-inch plain sections should be ordered. One would probably not use a thousand the first year; but during a good year more than 500 would be necessary, and it is well to order sections in full packages.

For supplying these sections with full sheets of foundation, about eight pounds of the extra-thin super foundation will be needed.

Brood-frames should all be pierced for wiring. The piercing and the wire for wiring the frames costs about ten cents extra per hundred frames. Full sheets of medium brood foundation should be used, and it will take thirteen or fourteen pounds to fill one hundred frames. The use of starters in brood-frames is very poor economy. I have tried both starters and full sheets.

There is no better uncapping-knife than the Improved Bingham. We order them made one inch longer than the regular size, but very good work can be done with the knives of ordinary length. A Coggshall brush is very essential for freeing the combs of bees when extracting or at any other time.

It might be well to have two or three extra stories the same as the hive-bodies, for there are sometimes combs that are undesirable for use in the brood-nest, but which would be all right for extracting-frames. In this way, even if no particular pains are taken for producing extracted honey, some may be secured the first season. The second season, all extra combs from dead or queenless colonies could be used for extracting-combs. Then if shallow extracting-combs are used in the comb-honey supers, as I have recommended, by the second year, at least, quite an amount of extracted honey may be produced. In this way the beginner may be gradually drawn into the production of both comb and extracted honey until, before long, half of the yard may be worked for each. The amount of extracted honey can be regulated, however, for if more empty combs accumulate than are needed for extracted honey the swarms could be hived on them.

Remus, Michigan.

HEADS OF GRAIN

FROM DIFFERENT FIELDS

SEALED COVERS AND DRY CUSHIONS PREFERABLE TO ABSORBING CUSHIONS.

I have noticed the article by W. F. Cox, page 66, Jan. 15, and also the one by Mr. Doolittle, p. 51, same issue, about absorbing cushions. I hesitate to differ with such authorities as Mr. Dadant, for instance; but I have had cushions over my colonies for ten years, and I have never found any moisture on the frames when the clusters were up next to the cushions. I use a water-proof cloth between the frames and the cushion, and I provide only a small entrance, and a cushion of sufficient thickness to keep the heat from escaping upward. The bees naturally get next to the cushion because it is the warmest place in the hive, and not because the cushion absorbs moisture. If a colony is in good condition the bees sleep almost all the time, and there is scarcely any moisture condensed, because they do not breathe much. Colonies cared for as stated above never suffer for a flight in the winter, and never spot the hives, even when they do not take flights after long cold spells.

I could give much more evidence, if necessary, but I am sure that, whenever a bee-keeper gives the above plan a fair test, he surely will agree with me when I say that cushions do not absorb the moisture. If they did they would become cakes of ice, and the cluster would get down next to the entrance to keep out the cold. I keep the cushions on the year round, with the entrance contracted in the spring to protect the brood, and there is a good deal of advantage in this plan in the production of comb honey. B. D. HALL.

Royal, Ill.

[Where one uses water-proof cloth between the cushion and the bees he has a sealed cover. Over such, with a good roof, the cushion is bound to keep dry.—ED.]

MOVING BEES SHORT DISTANCES ON WARM DAYS DURING THE WINTER.

Dr. Miller, on p. 74, Feb. 1, says that I ought to try shaking the bees in front of the hive after moving them that short distance (40 rods), and he adds that he has considerable faith in shaking for that purpose. Then the editor, in the footnote, says, "Good suggestion, and it will work too." Very likely it would work, but it would take longer, and would be more work. Then it would not be a good plan to break the sealed cover loose in winter, for we have some cold weather here. The last colonies I moved I smoked several times when I opened the hives, and very few, if any, came back.

After I wrote that letter which was published on p. 63, Jan. 15, I moved some more colonies on different days when there were many bees flying. One day I moved about 15 hives, and on another 35. Part of these hives were closed for half a day, and part opened as soon as set on the stand, and smoked immediately, then smoked twice more, allowing about 20 minutes between the smoking; and as there were no more bees at the old place I could tell that scarcely any bees returned. Has any one tried smoking bees a number of times every 20 minutes to keep them from returning to the place they were taken from?

Lytle, Texas. CAREY W. REES.

BEES MOVED SUCCESSFULLY FOR SHORT DISTANCES ON WARM DAYS IN THE WINTER.

On p. 91, Feb. 1, the editor informs S. Cheatham, of South Carolina, that it is not practical to move bees short distances in a climate warm enough for them to fly nearly every day during winter. Now, I know it would be folly to attempt such a thing in the summer when they are working regularly every day; but we have repeatedly moved single colonies, also entire apiaries, short distances during the winter in South Texas, and with no apparent loss

On Jan. 1, 1907, we moved an entire apiary of 75 colonies a distance of 50 rods. The next day was warm, and I noticed a good many bees flying about their old locations. In a short time, however, every thing quieted down, and, returning to the new yard, I noticed several hives bringing in pollen. Later in the evening I examined the old location, and there were no bees on the ground or shrubbery, as there would have been had they not found their way back to their hive. We also moved an entire apiary of 80 colonies about ten rods in the winter of 1907, with good results, not a bee being lost so far as we could tell.

The first lot was moved on a wagon without springs, and, of course, were jolted considerably; but the last lot was moved by hand, and, consequently, did not receive much of a shaking-up. This was in Brazoria Co., where bees fly every few days during winter; in fact, they gather some pollen every month in the year. If a hive is left near the old stand a good many bees will return to it; but otherwise I think there will be no trouble. J. D. YANCEY.

Bridgeport, Wash., Feb. 18.

WINTERING IN A WARM ROOM.

In the last three numbers of GLEANINGS there have been articles regarding wintering bees in a warm room, and I notice a request for any experiences regarding the matter. On p. 118, April, 1908, *American Bee Journal*, in Dr Miller's question-box, under the head of "Either Chunk or Section Honey—Interesting Experiment," you will find my experience with a small colony. I will add that it came out in the spring much stronger than in the fall. In June I introduced a new queen, and it was doing well until the drouth struck us, when it was robbed out

CHAS. M. MUSGROVE.

Pittsfield, Mass., March 9.

Please tell me where I can get Bokhara clover and alsike seed. Which do you prefer?

Newark, O. LEONARD ESSMAN.

[You will want both. The alsike seed can be sold to nearby farmers at a low price. See elsewhere in this issue how to handle alsike. Bokhara clover (sweet clover) has been advertised in GLEANINGS the last two or three issues. Sow in waste places, along railway tracks and roads. Requires no cultivation to do well —ED.]

OUR HOMES

By A. I. Root

As for me and my house, we will serve the Lord.—JOSH. 24:15.
Woe unto him that giveth his neighbor drink; that puttest thy bottle to him, and makest him drunken also.—HAB. 2:15.

Dear friends of GLEANINGS and friends of temperance, I am praying that the great Father will send his Holy Spirit along with this Home paper in such a way that it shall do a great work; and this great work rests on the shoulders of you who have been reading my Home talks as much as or more than my own. This talk is mainly to the editors of the periodicals that go into the homes of our land daily, weekly, and monthly; and I am depending on you to get it before them, either by a personal call or by cutting it out and mailing it to them. If the same editor or publisher should have his attention called to it more than once, all the better. Now may God speed you in your part of the crusade to redeem the press of our land from the thralldom of the rum traffic. The following kind letter will open up the matter:

Dear Brother Root:—I am a bee-keeper in a small way; and in the twelve or fifteen years that I have been a regular reader of GLEANINGS I have received much benefit therefrom, and in no department have I received more than from Our Homes, edited by yourself. May God bless you, and give you wisdom to fight the evils you have attacked all along the line.

In the March 1st issue I find a letter written to you by Frank L. Platt in which he states that "the brewers and whisky retailers have cut the Toledo *Blade* (weekly) off their list because the said paper does not accept brewery or whisky advertising." Now, I should be much pleased if Mr. Platt's assertion were literally true; but I know he is mistaken or misinformed. My wife has taken the *Blade* a number of years, and it (with two or three others out of the dozen or so we take, including one daily) still caters to the brewery and whisky trade.

I send you a copy of the weekly *Blade*, dated March 4, in which you will find no less than four advertisements in the line referred to. As to the political part of the paper, I will make no statement, as the paper will show for itself. I am truly glad to know that Editor Platt is "trying to play the square game," and would to God there many more such editors.

Greenville, Ill., March 9. J. T. BUCHANAN.

With the above letter came a copy of the *Blade*, and, sure enough, there are *four* whisky advertisements. I give below an extract from one of the four as a sample:

TWELVE-BOTTLE CASE FINEST WHISKY FOR ONLY $5.00—EXPRESS PREPAID.

Send us $5.00 and we will send you a case of extra special distillation whisky in 12 large full 16-ounce bottles, all charges prepaid to your nearest express station without marks to betray the contents.

By the way, does not the closing sentence of the above furnish a sufficient reason why any respectable home paper should reject such an advertisement? "Without marks to *betray*," sure enough! To betray what? The *hellishness* of their business. I confess I am surprised to find such things in the *Blade*. It has for years had the reputation of being not only "keen and sharp," but of "hewing to the line," not only regardless of party, but for righteousness and truth. I don't like to take back what I said about the "Lord being praised." Can't the management of the *Blade* help us out? Are not such advertisements "putting the bottle to our neighbor's lips"? Is it too much to expect that the *Blade* may turn over a new leaf, and stand out, like Joshua, and say, "As for me and my house," etc.? How many besides myself will undertake to write to the *Blade* in regard to the matter? Clip this whole article from your journal and mail it to them, telling them respectfully your views about whisky advertisements. It doesn't take many such letters to bring about an *investigation* (if nothing more), as I know full well.

I stopped a Cleveland daily a while ago, and told our newsdealer I wanted a daily that would not advertise Duffy's malt whisky. About the third issue, there it was, right before my face and eyes again. If the Duffy people with their big pictures of aged people, whom they claim lived so long *because* of the daily drinking of Duffy whisky are not putting the bottle to their neighbor's lips then I don't know who are.

A few weeks ago the National Superintendent of the Anti-saloon League came down here to Southern Florida and made an address at St. Petersburg. He told us how Lincoln protested when he gave his consent to the tax on liquor. Said he, "Gentlemen, this thing you propose may prove a worse curse to our nation than the war that is now upon us;" but the financiers of the nation urged, and he finally consented, with the understanding it was only as a temporary expedient at that terrible crisis, and had the fairest assurance that it should be stopped promptly when the war was over. When the war was over, Lincoln had died by the hand of an assassin, and the whisky men and brewers were getting so rich it was put off and put off, *until this present time.* Are there not good men and women enough living now to demand that the sacred promise given our beloved president be, even at this late day, remembered and religiously kept?

Mr. Baker, during his talk, asked if any one could tell exactly who started the present tremendous wave of reform. Then he told us of the temperance literature and text-books the W. C. T. U. women put into our schools years ago. Said he, "The seed sown by these godly women has just now commenced to bear fruit by giving our nation a new generation of men and women who learned the truth in childhood from their schoolbooks." I wanted to add, "In spite of what we read about Duffy's malt whisky in the daily papers." He closed his address by saying that, right in that audience, sat a man who years ago had faith in Howard H. Russell and the Anti-saloon League. He then asked the man to stand up so the great audience could take a look at him. When I came to that very pretty little Florida city that night I felt like a stranger in a strange land; but before the audience had all left the church I felt almost as I do at the close of a bee-keepers' convention.

Florida has 46 counties, and 37 of them are all dry. There are saloons in only 15 towns and cities in the whole State. A map of the wet and dry portions can be had of the Florida Anti-saloon League. Jacksonville, Fla., since the map was made, and one town at least (Carrabelle), have gone dry. As a recent summing-up of what has been done in Ohio and Indiana, I give below a letter from Ernest and a portion of one from Wayne B. Wheeler.

Dear Father:—I inclose you the annual report from Wheeler. I think you will be glad to read it through on account of the fact that you are one of the officers of the State League, and, further, for the good news which it contains. This report, as you will remember, was written in January. The legislature has all but adjourned, and, as you will see, Wheeler's predictions that our county-option law would not be repealed have been made good.

I do not think there is any danger now of our losing any temperance laws we already have on the statute-books.

You doubtless noticed that counties are going dry in Indiana in lots of fives and tens. The legislature is disposed to repeal the county-option law of that State, and the House has already voted to do so. I can hardly think that they will attempt to repeat the action in the Senate; and if they do, it will be a big overturning of political leaders in Indiana two years hence. E. R. R.

Later.—The Senate refused to concur, so that the Indiana county-option law stands, and will stand, as the liquor people will never be able to muster up strength enough to defeat it after three-fourths of the counties go dry. E. R. R.

Mr. Root:—Permit me to submit herewith the annual report for the Ohio Anti-saloon League. The year 1908 was one of the most effective, inspiring, and successful in the League's history. It started with the great legislative contest for the enactment of the county-option law. The liquor interests, realizing the injury which such a measure would bring to their traffic, fought it with the energy of despair; but the legislature listened to the people rather than to the brewers' lobby, and enacted the law.

Four other measures were enacted at this same session of the General Assembly: 1. The bill preventing C. O. D. sales of liquor in dry territory, and the operation of clubs in dry territory where liquor was kept in private lockers; 2. A measure which prohibits any person under sixteen years of age from working in a brewery, distillery, saloon, or other place where intoxicating liquor is sold for beverage purposes; 3. The law known as the "Nuisance Act." It provides that, upon a second conviction, a p'ace where liquor is sold shall be abated as a nuisance; 4. A law to prevent dairy milch cows from being fed from distillery slops and starch waste. It was of especial interest to Cincinnati.

PREPARATION FOR THE CONFLICT.

Following the adjournment of the legislature until Sept. 1, when the county-option law went into effect, every effort was put forth to organize the counties for the vote. The first elections were held Sept. 26 in Meigs and Warren counties. They voted dry by substantial majorities. Since then elections have been held in rapid succession until we now have 57 dry under the county-option law and 5 under other laws, making a total of 62 dry counties. We consider this the best "Christmas present" which the League could present to the people of Ohio.

Over half of the territory in the 26 counties that have not voted, or failed to vote dry under the county-option law, is dry under the municipal, township, or residence-district option law. Adding together all of the dry territory under these four laws we now have over 85 per cent of the geographical territory of the State without saloons, and over 60 per cent of the population.

FINANCIAL REPORT.

A great financial burden was placed upon the League by these local-option, legislative, and legal contests. The crisis was upon us, and we had to meet it, even though it was necessary at times to draw on the future. We believed that the people would respond if we did our part. The results show that we did what any sane leader ought to have done under the circumstances.

The amount raised for the League up to Dec. 1 was over $80,000. The expense is within this limit. This is a substantial gain. In addition to this the temperance people have raised several thousand dollars for local work in these county campaigns. The public accountants will make their report on the books the first of the year, and we will mail a copy of the same.*

NEEDS FOR THE COMING YEAR.

Each year the needs of the League have grown with the progress of the work. We need two or three more men in the field at once—one more attorney and at least one more campaign speaker. During these contests we had to call to our aid men from other States, at considerable cost and inconvenience to the work. We are now coming to the counties with the large cities. That means we must have more workers, more literature, and a longer campaign of education. The same hard work that has won the elections in these 62 counties will win it in others; but we must have literature that can be read by foreigners, who thus far have not been reached by our present methods. With the experience which we have had, we believe a goodly percentage of this class of people can be educated to see the advantages of a no-saloon policy; but we must have the men, the literature, and the organization with which to do it. This means more money to carry on the work. We ought to have $100,000 this next year for the aggressive campaign that has been mapped out. It is essential if we measure up to the possibilities before us. Your contribution made possible many of these victories, and we trust you will continue your partnership in and support of the work which is so rapidly redeeming Ohio from the curse of the liquor-traffic.

W. B. WHEELER,
Superintendent and Attorney.

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* This has now been done, and the audited accounts are now in print, and available to any one.

THE GREAT CITY OF CHICAGO HAS EIGHT SALOONS TO EVERY FIVE GROCERIES.

We clip the following from the *Sunday School Times:*

The annual national "drink-bill" of the United States can not be accurately calculated, even on the financial side. Chicago alone spends about a hundred millions in the retail trade, and has eight saloons to five groceries. The total number of gallons of distilled spirits, wines, and malt liquors consumed in the United States in 1906 was over two billion forty-eight million. The total consumption per capita has risen from 17.12 gallons in 1896 to 22 27 gallons in 1906. The brutality, disease, degradation, misery, and death which are traceable to liquor do not admit of quantitative statement.

The brewers are primarily responsible for saloon conditions. Saloon-keepers are usually under such material obligations to them that their dependence amounts to vassalage. They have steadily glutted the market with malt liquors, the number of gallons per capita having jumped from 8.65 gallons in 1881 to 20.21 gallons in 1906, while that of wine and spirits has remained almost at a standstill. Again, the hidden hand of the brewers is felt in political action, not only indirectly through the power of the corner saloon in ward politics, but also directly in bringing to bear great accumulations of capital upon State legislation.

High license and local option, in one form or another, are the prevalent methods of control, a combination of the two systems being usually employed. The working of county-option laws has recently tended toward complete prohibition in several States. The notable anti-liquor movement in the South and other sections of the country is rapidly increasing the prohibitive area.

Just a word in closing in regard to the responsibility resting on editors:

Turn to page 185, GLEANINGS for March 15, and read.

Now, then, are we going to *continue* to help a periodical that "giveth his neighbor drink," or shall we indorse and encourage the one that stands with that old warrior and hero, Joshua?

While reading the Dec. 1st, 1908, issue I came to the temperance department, and, by the way, I never miss that nor the Home papers. I read personal liberty, etc, page 1451. Now, don't you feel sorry for friend F.? I do. He surely is running in a narrow groove. Personal liberty, indeed! Let all such prove their liberty by abstaining from an occasional glass. They will soon see that they have no liberty in the matter. But we do not deny such as he the right to their occasional glass. But we do deny that they have the right to make drunkards of our boys and prostitutes of our daughters, for that is what the open saloons stand for, besides the corruption of politics. Then a look in the wake of the saloons. Do you see liberty? May be; but not such liberty as the fathers of the Revolution fought for.

When I had read friend F.'s letter I hustled for the Dec. 15th issue. Turning to "Temperance" I read, "Jug of whisky for a Christmas gift."

O how sad! for it brought to me a scene that comes within the circle of kinship—a man and his family, if that were all. The man believed in an occasional glass, however rare, hardly once a month. But whisky will have its own, whether once a month or once a day, and this case proved no exception. They had been to town, that happy family. The man took that one glass. It made him careless and sharp with the horses. The team was high-lifed, and resented his treatment of them. They ran off, throwing the driver and all out. The man struck a tree and was instantly killed. The mother, in her excitement and grief, clasped her babe tightly to her bosom as she gathered up her other children, who were not hurt, and bent over the lifeless father.

Sympathizing friends, who soon gathered, asked her what was the matter with her dress, the front of which was covered with blood. When they looked the babe was dead. Its throat was torn clear across. The mother fell senseless to the ground. She remained in a dazed state for a long time. She never fully recovered from that heavy blow. Years after, when I was a small boy, I would see her. Her old bent form, her white hair, and her sad face, are still fresh in my memory.

Friend A. I. R., my wish for you is that you may have length of years and strength of mind to fight in the front ranks of this great and glorious cause. My wish for myself is that I might some time meet you, to clasp your hand and look in your face.

The "Rootlets," as you call them, must be proud to have you for their father and grandfather. The Temperance and Home departments should never be dropped out of GLEANINGS.

New Dover, O., Feb. 16. E. E. LARCOMB.

GOOD FOR INDIANA.

We had our county election Jan. 26. It was voted dry by 1600 majority. The three other counties that had the election the same day went dry by a big majority. C. E. WESTON.

Letts, Ind.

ENLISTED FOR LIFE UNDER THE BANNER OF THE CROSS.

In closing let me say a few words of appreciation of the grand work Mr. A. I. Root has done and is doing in his department of GLEANINGS. His writings influenced me to be a Christian. I think it was that sermonette on that picture entitled "Despised and Rejected of Men," Jan. 1, 1907, that led me to the Savior. I am trying to earn enough money by working for a magazine subscription agency (mail-order work) during my spare time to buy my books (I am preparing to enter the ministry). All my work and study is done in my own little bedroom, as my father opposes all that speaks of God or his work. I should like you to send this to A. I. Root; but please do not publish my name if you use any of this in GLEANINGS. I am a boy 17 years old. Thanking you for past favors, I remain C. M.

POULTRY DEPARTMENT

CONDUCTED BY A. I. ROOT.

"NOTHING TO DO BUT GATHER THE EGGS," AND AN AUTOMOBILE TO DO IT WITH AND CARRY THEM TO MARKET.

"Nice things," friends, as I have outlined it in the above, is it not? Well, it is just what I have been doing the past winter, and I agree that it *is* lots of fun, *especially* taking the eggs to market with the auto. You may say, "Oh, yes! when one has plenty of money," etc. But just hold on a little. The auto I use has been in use five years. When thinking of getting a new one I could get an offer of only $100.00 for it. I decided it was worth more than that to me, and had it shipped down here at an expense of about $50, so you see I have not much capital invested. A colored man we keep about the place takes care of it nicely, and, under my directions, has so far been very successful in making about all repairs needed. Gasoline here, by the drum, costs only 11½ cts. per gallon; so our rig, that affords Mrs. Root and myself a great amount of enjoyment, costs us much less than a decent horse and buggy. A neat little house for it cost only about $75.00, and this makes a very handy and much needed workshop besides. What about running an auto in the Florida sand? Well, I had some trouble before I had learned by experience how to manage; but now we have but very little trouble, even if our Oldsmobile runabout is only 4½ horsepower. One great drawback is that it tracks 56 inches, and all the vehicles about here are 60 inches. In spite of this, when I can manage so as to have the wheels on one side or the other run over out of the road on grass or other hard ground I get along very well. When all four of the rubber tires are in soft dry sand you may get in a fix. It is not a serious job even then, for you have only to scoop the soft sand out of the way until you can get out on firm ground. After a rain you are O. K. anywhere, and nice roads are now being pushed forward more or less all over Florida

Now about the eggs in an automobile. Unless they are well packed you will have to go slow; and my auto path through the woods over a rustic bridge of my own make (materials cost 30 cts.) is *not* the very best road in the world for carrying eggs to market. I managed by purchasing in Chicago some very pretty pasteboard boxes holding a dozen eggs each, for only $5.00 per 1000.*—These boxes I carry around to the nests (always washing my fingers first), and place each newly laid egg in its little receptacle. Each box of one dozen then has a gummed label pasted on that reads as follows:

> FRESH EGGS
>
> FROM A. I. ROOT'S SINGLE-COMB WHITE-LEGHORN POULTRY-RANCH, ONE MILE SOUTH OF BRADENTOWN, MANATEE COUNTY, FLORIDA.
>
> If these labels are unbroken the purchaser can rest assured that the eggs in this package were laid on the day that the rubber stamp below indicates. We gather our eggs not only every day but usually *several times* a day. A. I. ROOT.
>
> MAR. 4, 1909

We usually gather our eggs every day about 4 P. M., and before 5 they are on the counters of one of our best grocery stores.

For some time past we have had from 45 to 50 eggs per day from our 70 hens, and I consider this a very fair yield for 70 all in one yard. A dozen eggs pays for the cost of the grain for the 70, and at 25 cts. per dozen there is a margin of about 75 cts. a day for your labor. Yes, there *is* a trifling *amount* of labor to be done with 70 "chickens," besides gathering the eggs—at least we have found it so on our "ranch."

I have had such "good luck," almost invariably, in setting hens that I think I must have been getting over-confident. Do you want to know how the Buff Orpington made out with her 25 eggs? Well, she was so clumsy and awkward that she broke one or more eggs every day until she had only 15 left. I washed the whole setting repeatedly until I was not only "tired" of Orpingtons, but I came pretty near being tired of setting hens altogether After 24 days and not even *one chick* from the remaining 15 eggs, I broke her up and only two eggs contained chicks in any stage. Because other hens wanted to lay in her nest I had her shut in with wire screen, lifting her out toward night, and letting her go back herself. I should be inclined to think this not exactly "nature's way" were it not that the Leghorn hen that hatched 16 chickens from 15 eggs was managed in this way exactly. Shall I tell you more about those same 16? Well, when old enough to wean the mother hen went up into the pine-tree with the other 70, and the 16 huddled up behind the barrel in the laying-house. Mrs Root repeatedly urged me to protect them with wire screen, but I "didn't get round to it" until one morning when I found *five* missing. and their remains scattered about near where they roosted. I housed the remaining 11 and tried to trap the "varmint" with the dead chicks. Twice he got in my trap and pulled out; then I went for a good steel trap; but both hardware stores were "sold out." I finally got a second-hand one, but haven't caught him yet, although I am "on the war-path." Yes, I know I can *fence out* all such animals with poultry-netting; but the fowls of my largest yard seem to enjoy so much roaming over the common (we have no near neighbors), I leave a hole in the fence for them to go out and in; and it is at this entrance, out and in, where I am planning to trap the enemy, 'possum or polecat.

*I find a label on these boxes reading, "Mfd. by Central Egg Carriers Co., McGraw, N. Y."

My first trial with the incubator gave me 35 chicks from 70 eggs, which I think is pretty fair. They were put at once in a Mandy Lee fireless brooder, and just now, at four weeks old, they have certainly done *better* than those of the same age with a hen. In this region there is surely no need of artificial heat of any kind for brooding chickens. I had no mishap of any kind except that two got out of the cluster one night over to the opposite end of the brooder, and finally died. Had I looked in, the evening before, this would have been avoided; and had the brooder contained 50 or more, instead of 35, I think there would have been no "cold corner." It is exactly the same as with bees—if a part of the cluster get off by themselves during a cold spell they may chill or starve, or both. With the experience I have had with fireless brooders I feel sure there is no need of paying any one for a patent. Any sort of box or barrel that will keep out intruders and give ventilation is all that is needed. For a hover over the chicks, just tack strips of soft woollen cloth on the under side of a board, and suspend this just above the backs of the chicks. There should be some simple arrangement to raise this hover as the chicks grow older. While I was away one cool day they all clustered in a corner outside; and as Mrs. Root could not well get them to go in, she spread a soft empty burlap sack over them. When I got home about dark they were as quiet, warm, and comfortable under this sack as they could be in the very best brooder. All that was required further was protection from rain and outside intruders. Below is a sample of the reports that are coming from those even away up north who have used the "fireless."

Mr. A. I. Root:—Last spring we got the bee fever. We sent for some sample copies and read them from cover to cover, and had the fever more than ever. We were most impressed with GLEANINGS, and subscribed at once. Now having read it for nearly a year we have such a good opinion of it that we intend to get it as long as its present standard is kept up, bees or no bees.

We read about the Philo system and sent to Mr. Philo and got his book. We made some brooders and they worked finely. No more artificially heated ones for us.

Let me tell you the chicks are as lively as crickets. When the first lot hatched it was about 10 above zero. As this was to be a little experiment, we also had some with a clutch about five days older. At the present writing, any one seeing them would say the ones in the brooder are the oldest by far. With the heated brooders it was necessary to sleep with one eye open all the time, making chick-raising a drudgery. We once nearly lost a whole brooderful by fire. Passing the house accidentally we saw it and saved the ckicks and building. Like you, at first we were worried about their getting too cold at night. One night in particular we well remember going out to the house and putting our hands in the opening, only to find it warm and cozy. While it has been said that "seeing is believing," it is also true that trying is convincing. After they were one week old we even had to take off some of the covering for fear they would sweat and then catch cold. Our friends and neighbors come and look at them now and then, and are surprised to find them still alive and scratching. We intend to raise between 600 and 800 the coming season, all with fireless brooders.

I say, off with your hat to Mr. Philo, for he deserves it.

Lititz, Pa., Feb. 26. SNAVELY BROS.

HOW TO MAKE HENS LAY.

Let us go back to the "egg business." Four dozen eggs a day from six dozen hens, if it could be kept up the year round, would be something like 240 eggs per hen, per year, from the whole flock. This, of course, would be impossible. Mr. Rood tells me the winter months are the great months for eggs here in Florida; but even if it is, I think few get as many as we do.

In order to get this result, I give them corn, wheat, and oats, all they will eat, and they have sprouted oats, soaked oats, and dry grain all the time It would almost seem as if the sprouted oats they dig out of the ground would be enough green feed; but for almost two months they have been having a wheelbarrowful of lettuce every day from Mr. Rood's lettuce-fields. Heads that burst, or for any reason are unfit to ship, are given the chickens. Besides the above, they have fresh oyster shells, pounded up every day. We have excellent oysters here, right out of the shells, almost every day all winter. Besides this, mica crystal grit is always in a feed-hopper for them. At first they did not notice it; but now I buy it for them by the 100 lbs. You might think this enough; but I wanted to test Mandy Lee's egg-maker, and I have fed half a $2.00 pail of it since Jan. 1. As I gave it to the whole flock, I don't see how I can tell how much good it did under the circumstances. I know this—they don't seem to like it as well as they do the wheat bran wet up alone, and I have to give them only a very little in the bran, or they won't eat it at all. Because Fred Grundy made such great claims for alfalfa meal, I got a bag of it; but my Florida hens won't eat it *at all.* They go for the green home-grown alfalfa, but all say "no" to the stuff in bags, even when scalded and mixed with bran. Crenshaw Bros. inform me that they at present know of no successful alfalfa-growing in the State.

TESTING OUT THE FERTILE EGGS BEFORE PUTTING THEM IN THE INCUBATOR; SEE P. 147.

In due time I received for my 50 cts. a poorly made egg-tester, exactly such as Cyphers and others sell for 25 cts., but no secret. I was informed that I could not have it until I signed a pledge "not to divulge," etc. As nothing was said in the advertisement (see p. 147, Mar. 1), I begged to be excused, and asked for my money back, both for tester and for secret; but the following *did* come—no date nor name signed to it:

METHOD OF TESTING EGGS.

Place the tester on lamp, the testing-tube next to the burner. Don't turn the blaze too high, else you might heat eggs too hot while testing.

Take the egg in the finger-tips and thumb of the left hand; steady it with finger and thumb of right hand; place before and against the opening in the tube. It is always best to hold the egg big end up. If infertile it will be a clear milky color with never a sign of yolk to it.

You can never make a mistake between an infertile and a fertile egg. A fertile one will show the golden yolk, and will be of a rich golden hue. If the shell be reasonably thin you can see the outlines of yolk, with a heavy color at the germ center. The germ, if strong, imparts the color to the egg. It is hardest to learn the weak-germed ones—they will show a slight yolk and color, but it is always a pale sickly lemon hue. Never give an egg the benefit of the doubt unless extremely high-priced; then you might risk it.

Don't mix the eggs after testing, then blame the method if any fail to hatch.

Don't think you are proficient after once testing.

Don't use too strong light, such as an electric lamp.

As I was just starting my incubator I went over 75 eggs very carefully, and selected 10 with scarcely a sign of a yolk visible. I put a pencil-mark around these, and tested them daily. In about three days six of the ten showed strongly fertile. Out of the whole 75 I found fourteen unfertile; ten more, besides the four marked ones. As fourteen is very nearly 20 per cent of the 75, according to the rule of chances I should have found two bad ones out of the ten instead of the four. Will some of our trained experiment-sta-

tion workers take this up and tell us if it really is possible to tell any thing about the fertility of an egg just laid? There is no *invention* here, and nothing *new*; for hundreds of people for years past have examined eggs with a tester at *all* stages of incubation. Later I received the following:

If you will set but rich yellow or orange-colored eggs you will hatch a fine per cent all right. MRS. L. L. WHITE.
Montrose, MO., Feb. 25.

KILLING VERMIN ON FOWLS BY PUTTING SOMETHING IN THEIR FOOD.

Please turn back to p. 147, March 1. Well, here is what I got for my dollar—no name signed, and no date.

KILL MITE.

1 lb. hyposulphite of soda; 2 oz. Epsom salts; 1 oz. nuxvomica powder.

Dose: One tablespoonful to 25 fowls daily for three days; skip three days, and repeat.

For quick work, clean premises with carbolineum so they will not become reinfected.

Please put on your "thinking-caps," all of you, and listen. How did this man Sprague, or any other man, *discover* that the above drugs, in just the above proportions, fed to fowls, would banish insects? Was there any discovery at all? We have recently been told here in these pages that carbinoleum will do the work. Is that other stuff just a blind, or an excuse for taking the dollar for less than a dozen lines on a little scrap of paper?

I haven't yet heard from the last party in regard to the ten-cent deal, but I will look after it. If there *is* a way of filling an incubator with fertile eggs *on the start*, I am willing to invest more money on it, since I have got started.

I think I have said before that our incubator catalogs given away every season are often worth more to any one thirsting for real knowledge than all the secrets and many of the books that cost dollars. Well, the most valuable article I have found anywhere along in the line of "nothing to do but gather the eggs," is in Cypher's catalog. Suppose, for instance, you should see something like the following in some of the poultry journals:

"A WONDERFUL NEW DISCOVERY THAT WILL REVOLUTIONIZE POULTRY-KEEPING."

A "system" whereby you need not feed, nor clean out the pens oftener than once a month, and yet the results will be far beyond any other method. *Only one dollar for the great secret.*

Wouldn't the above make a sensation—that is, if people would *continue* to invest as they have been doing? Well, the closing chapter in Cypher's catalog contains information that pretty nearly fills the bill. Here are some extracts from that chapter. It refers to two test pens of sixty chicks each.

CYPHER'S "DEEP-LITTER" METHOD OF FEEDING.

The deep-litter-fed chicks were larger-framed birds, but not as fat. No green food was supplied the deep-litter-fed chicks, except that short-cut and shredded alfalfa were used as litter, and portions of this material were scratched into the drinking-pans, and the chicks quite often were seen eating this with apparent relish. Water was supplied in all cases by the drip system.

Deep-litter feeding enabled the attendants to take care of fully one hundred per cent more chicks than was the case with the hand-fed chicks; and the deep-litter, scratch-or-go-hungry method produced healthier and more vigorous chicks by a large percentage.

Any time the attendant looks in on deep-litter-fed chicks he will find holes dug in the litter to the depth of several inches, and in some cases the chicks will be entirely out of sight in the holes they have dug, searching for chick food or grain, and working like little beavers for their daily ration.

The deep-litter method is indeed a great labor-saver. The attendant does *not* have to carry with him an alarm clock in order to get back from other poultry work to feed four or five times a day; once a fortnight or even once a month is all that is necessary. Compare the work of feeding chicks in deep litter once a week, or once every two weeks, or even once a month, with feeding them three to five times daily, and compute for yourself the big saving in labor. Furthermore, by the new method less food will produce more pounds of flesh, bone, and feathers, also larger-framed and more vigorous chicks.

One naturally would suppose that, if a brooding-pen were not cleaned oftener than once a month, the stench would become unbearable. Such has not been found to be the case in the experiments here described. Time and again the same litter has been used on Cyphers Company poultry-farm during twelve weeks' experimenting, and no odor was noticeable. In eight to ten inches of litter the moisture of the droppings was quickly absorbed; and the chicks, by scattering the litter about, assist in disposing of whatever odor is present.

In eight cases of deep-litter feeding, compared with eight cases of the hand-feeding method—in which tests the chicks were hatched for two brooders at one time in order to obtain the same hatching benefits—the deep-litter-fed chicks, in six out of the eight tests, came into laying before the hand-fed chicks, and their plumage and general condition were noticeably better.

I will tell you why I have so much faith in the above. When I was about a dozen years old I had a poultry-house on a side hill below my father's horse-stables; and by my request the horse-droppings were shoveled down to the 40 or 50 laying hens for them to scratch over. This fined-up and comparatively dry manure was then banked up around the walls, and thrown over my nest-boxes that were down on the sheltered gravel soil. The slowly fermenting manure kept the eggs from freezing; the drinking-water likewise (drip system); and as the fowls roosted on low roosts they did not suffer from severe weather. I not only had eggs all winter long, when nobody else had any, but received the then unheard-of price, for a short time, of two cents for each egg. I remember delivering some to the rich man of the town when it was so cold they froze in my little basket. I was almost ready to cry about it when the good man said, "Never mind, bub; as we are going to use them right away they are exactly as good as if not frozen," and then I trudged back to my biddies, happy to think I got my *two cents* after all. This rude poultry-house that gave such good results was one of the "open-air" kind, I think, for I don't believe I had money enough at that time to purchase any kind of glass or sashes. I kept grain all the time in the litter, and they scratched it out all winter long; and, so far as I can remember, the house was never cleaned out until we hauled the manure away in the spring, and yet there was no bad odor at any time. I bargained with father to put my "compound fertilizer" under the hills on half of his cornfield, for the excess crop of my half over his half that didn't have the "treatment." I think I also did some extra work on my side of the field. Of course, he agreed to this, and I had almost enough the most corn to carry my poultry through the next winter.

I have been finding so much fault lately with poultry journals and poultry advertisers that I rather enjoy saying some words of commendation. On p. 148, March 1, I copied an advertisement from the *Poultry Herald*. I found, on receiving the process, that Mr. Ruel is a *bee-keeper*, and, of *course*, a *good man*. His directions for making a better egg-tester than any in the market (at least he thinks so), and his way of using it, are well worth the "silver dime," but it should be re-

membered he claims to be able only to pick out the fresh eggs from a mixed lot. If I am correct it is essentially what is called "candling" eggs in the great city markets. If one undertakes to fill an incubator with eggs from the store, or picked up from his neighbors, this would, of course, be a great advantage; but the process has nothing to do with deciding about the fertility of an egg the day it is laid. Since Mrs. White started it, I notice several are making similar claims. Is this thing to have a run like the "sprouted oats" business?

I have once or twice suggested that the poultry journals were backward about exposing frauds, because they might thereby lose some profitable advertising. I am, therefore, glad to see several coming out clear and plain, no matter if it does cost them something. See the following from that neat and spicy *Fancier's Monthly*, San Jose, Cal.:

These advertisements are read by innocent people who take it for granted that they can, by purchasing the book for $1.00, learn how to make a small fortune from poultry in an altogether new way. Nine out of ten of those who try it will give it up in disgust; for while the system may be all right the glowing advertisements are purposely worded to catch suckers, and they get them all right. We also do not hesitate to say that the 18 so-called "secrets" are only secrets to those who have never read a poultry journal for any length of time, or whose memory is so faulty that they have forgotten what they did read. The secrets have all been published, not once but dozens of times. They *are* well worth reading again; but it is the impression given by all such advertisements that a wonderful value for the money is given beginners, that we object to, *the inference being that there lies a short way to fortune from poultry culture*, while the sober truth is that, like learning, there is no royal road to it.

And all this reminds us of a much neater scheme to get rich quick by poultry. We are indebted to H. R. Noack, one of our subscribers, for it. We feel somewhat ashamed that we have not before this discovered such a way to wealth and told all of our readers about it. And it doesn't cost a dollar, either—just ten cents if you buy the *Monthly* at a news-stand, less than a nickel if you take it by the year. Feed at 15 cents a bushel; how to tell the hen that lays two eggs a day from the one that lays twice a year; how to distinguish roosters from hens when reaching for them in the dark, and various other beautiful bargains in poultry literature, pale into insignificance before the effulgent light of this.

Now, friends, if any of you want friend "Noack's" great "goack," send for the March issue of the *Fancier's Monthly*.

I am rejoiced, also, to find in *Farm Poultry*, Boston, Mass., a very full *expose* of "The 'new system' of selecting laying hens." It is the first time, if I am correct, that any *poultry journal* has published in full the Hogan $10.00 secret, or the Potter dollar secret of "Don't kill the laying hen." This *expose*, however, is copied from the *Journal of Agriculture*, Victoria, Australia. Why should our poultry journals go away off to Australia to get something that was published on these pages more than a year ago? A couple of clippings from the "Questions and Answers" column of *The Poultry Keeper* (Quincy, Ill.) may help to explain the matter. Here are the clippings from the March issue:

FEED AT EIGHT CENTS PER BUSHEL.

I read in the *Poultry Keeper* where there is a party who sells poultry feed for eight cents per bushel. What kind of feed is it, and will it pay to buy some of it for chicken feed? F. M. A.
Grand View, Wis.

We think you must be mistaken about any one offering to sell poultry feed at eight cents per bushel. Mr. F. Grundy, Morrisonville, Ill., advertises a system by which you can make your own poultry feed for eight cents per bushel, but he does not advertise to sell the feed. You should write him for particulars.

WANTS TO MAKE FIFTEEN-CENT CHICKEN FEED.

Please state in your next issue how to make feed for chickens at fifteen cents a bushel. J. W. E.
San Jose, Cal.

We assume that you refer to sprouting oats. When the oats sprout they increase in bulk about four times. Thus if you pay 60 cents for a bushel of oats you can sprout them and have four bushels. The process was published in this department some time ago. At present there are several advertisers selling this process, and it would not be fair to them to accept their money for advertising and publish the method.

When I was a boy I belonged to a society for "giving and receiving knowledge;" but doesn't it look now as if some of the poultry journals belonged to a "society" for *withholding* knowledge?

My answer to the above queries would have been, The feed at 8 cts. per bushel is alfalfa mixed with bran, corn meal, etc. If you write the advertiser you will find it will cost $2.00 to get a small paper book of 79 pages containing this and other "discoveries." The book is valuable, I admit, but its author should give a bigger and better "book" or make the price lower.

To the second query I would say, As long as we take money for advertising secrets (that we know are no secrets at all), we can not consistently keep our readers posted. You will have to go to the bee journals or—off to *Australia*.

A BEE-ESCAPE FOR CHICKENS.

Since our picture and comments on p. 70, Jan. 15, a number of devices have been submitted, and several more *think* they have solved the problem, but haven't *tried* it. It has only recently occurred to me that our "trap-nest" inventors are already on the same track; for the device that permits the hen to go into the nest, but not out again, would also permit her to go through a fence and not come back. The great trouble is to make the door or opening so that the fowl will not be afraid of it. A door to swing sidewise, like the cover to the keyhole in a padlock, is about what we want. Have it stand part way open, so a little squeezing will let the chicken through, but so made that this door will lock when pushed from the other side of the fence. The device can be made of light wood, so as to go cheaply by mail, I am sure. There is no particular need of sending it to me. Make it yourself and advertise it in the poultry journals. If you get something good and cheap we will give it a free notice.

Now just one thing more that is needed in order that we may have "Nothing to do but gather the eggs"—some sort of automatic watering-device. Why, it makes me "fidgety" to read about "fresh water three times a day," and "scalding the drinking-vessels," etc. Give the chickens "running water" every day in the year. If you can't do any better, have "drip water" always dropping. Put a clam-shell under a leaky rain-barrel, as we did down on the island at Osprey. Now, here is another field for you who are of inventive turn. On p. 22, Mar. 1, a post-auger is advertised that will dig wells. Have a well in your poultry-yard. Drop in drain tile to keep it from caving in. Then we want some one to invent a little windmill to pump "drip water" for the chickens. On our place here we get nice soft water anywhere by going down only about five or six feet. A "baby windmill" to pull up enough water for the chickens ought to be furnished for $5.00, may be half as much. Who will put it on the market?